



FOR APPROVAL

03/13/2018 10:43:18 AM

03 30 00 Mixed Designs



Submittal No. 46839
Date Issued: 3/13/2018

Argos
 1511 Ronald Reagan Blvd
 Cumming GA 30041

Telephone: (912) 236-4446
 Fax: (912) 238-9641
 Cell: (912) 508-8156

Contractor: GREATER GA CONCRETE LLC
Project: The Living Building @ GT

To Whom It May Concern:

We are submitting these mixes in accordance with ACI 318 (Cha
 mixture method:

**VERIFY MIX TO BE USED AT CONCRETE SLABS
 & BEAMS AT CISTERN.**

Mix Code Number	Description	Intended Use	Also utilized for electrical duct bank.
40CNC196	4000COMNAASH	Foundations	
40CNC577	4000COMNAASH	Interior Retaining Walls/Slab On Metal Deck	
45JAC0089	4500JSAIRASH	Exterior Retaining Walls	
50CNC972	5000COMNAASHHRWR	Columns	
40CAC285	4000COMAIRASH	Paving	

When placing orders for this project, please order by product mix code number.

Argos warrants that the concrete as delivered to this project will meet or exceed the design strength specified on the delivery ticket when evaluated in accordance with ACI-318, ACI-301, and ASTM C-94, latest revision. The measured slump, and the concrete must be tested in strict accordance with the provisions of ASTM standards C-172, C-143, C-31, C-39, C-617, C-231, C-173, C-138, C-1019, C-78, C-567, C-1064, latest revisions.

All samples and testing of samples for acceptance shall be conducted at the point of discharge from the concrete delivery truck.

Should the Purchaser choose not to purchase temperature control measures, the Purchaser shall assume all liability for rejected concrete due to non-compliant concrete temperatures.

Responsibility for concrete when others supply mix designs will be the sole responsibility of those parties supplying the mix design.

Customer assumes total responsibility for concrete placement, finishing, initial and final curing, placement of joints at proper spacing, and any aesthetic concerns/issues (such as cracks, discoloration, etc.) that may arise in the plastic and hardened state.

The contents of this packet, with particular consideration in regard to the mix designs themselves, are considered proprietary in nature and are to be treated as confidential.

This information is being submitted for approval for use on this project. Please provide Argos an approved copy or a copy with the notes for correction of this submittal, when available.

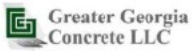
Concrete will be delivered to the nearest accessible point over passable roads; customer assumes responsibility for all damages to city, state, and personal property, including concrete mixer truck if customer instructs concrete mixer truck to drive beyond curb lines. Customer should provide concrete mixer truck with wash down area.

In accordance with ASTM C-94, please copy our office with all test results obtained on this concrete by independent testing laboratories.

All raw materials are subject to change depending on availability. All substitutes are guaranteed to meet or exceed projects performance specification requirements.

Thank you for your business and cooperation in this matter.

Ryan Parker
 QA Manager



REVIEW IS FOR GENERAL COMPLIANCE WITH
CONTRACT DOCUMENTS. ANY ACTION SHOWN IS
SUBJECT TO THE REQUIREMENTS OF THE
DRAWINGS AND SPECIFICATIONS.

Signed: Richard A. Kinsey

For APPROVAL

03/13/2018 10:13:38 AM

Foundations
03 3000



Date Issued: 3/13/2018

Submittal No. 46839

Customer: GREATER GA CONCRETE LLC

Project: The Living Building @ GT

Plant: ARMOUR DRIVE

Argos
1511 Ronald Reagan Blvd
Cumming GA 30041

Telephone: (912) 236-4446
Fax: (912) 238-9641
Cell: (912) 508-8156

Mix Code: 40CNC196	Mix Code must be used when ordering concrete.					
Description	Mfg. Source	Tradename	ASTM	Spec. Gravity	oz/cwt	Weight (lb)
Type I-II	Argos	Argos Roberta T-I/II	C150	3.15		435
Fly Ash C	Boral	Boral Scherer T-C	C 618	2.71		145
# 57	Hanson Aggregates	Hanson Lithonia #57	C 33	2.63		1,765
Natural Sand	Lambert	Lambert Shorter NS		2.64		718
Manufactured Sand	Hanson Aggregates	Hanson Lithonia 10SM	C 33	2.62		588
City	City	WATER	C-94	1.00		292
Type A Water Reducer	WR Grace	WR Grace Zyla 620	C 494	1.09	4.00	
Specified F'c :	4,000 psi @ 28 days	Designed Unit Weight:	146.1 lbs./cu.ft.		TOTAL	3,944
Specified Slump	4.00 +/- 1.00 in.	Designed W/C + P Ratio:	0.50			
Specified Air:	1.50 +/- 1.50 %	Designed Volume:	27.00 cu.ft.			

NOTES:

Argos has no knowledge or authority regarding where this mix is to be placed; therefore, it is the responsibility of the project architect, engineer, and/or contractor to ensure that the above designed mix parameters of compressive strength, water-to-cementitious ratio (W/C+P), cement content, and air content are appropriate for the anticipated environmental conditions (ie. ACI-318 sections 4.1-4.3, and local Building Codes).

Customer assumes total responsibility for concrete placement, finishing, initial and final curing, placement of joints at proper spacing, and any aesthetic concerns/issues (such as cracks, discoloration, etc.) that may arise in the plastic and hardened state.

Customer assumes responsibility for any performances issues (strength, aesthetic, durability, air entrainment etc.) as a result of water added to concrete at the project site that exceeds the w/c+p.

Designed mix cementitious content, is stated as a minimum, and Argos reserves the right to increase cementitious content.

Chemical admixtures are added in accordance with the manufacturer's recommendations. Argos reserves the right to adjust these dosages to meet the changes in jobsite demands.

All raw materials are subject to change depending on availability. All substitutes are guaranteed to meet or exceed projects performance specification requirements.

Argos may use admixtures or procedures not listed above to control the mixture during Hot or Cold weather, for pumping, long hauls, or other special applications, unless restricted in writing by the client.

In accordance with ASTM C-94, please copy our office with all test results obtained on this concrete by independent testing laboratories.

COMMENTS:

Ryan Parker
QA Manager

Date: 3/13/2018

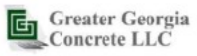


Mix Name: 40CNC196

Units : US

STRENGTH SUMMARY, Compression Either 4" x 8" Or 6" x 12"						
Strengths						
No. Of	Avg	Avg	Avg 7	Avg 28	Std	ACI318
Tests	Slump	Air	Day	Day	Dev	Req'd
30	5.83	1.80	3530	5280	690	5110

DETAILED STRENGTH, Compression Either 4" x 8" Or 6" x 12"						
Date Slump Air Strengths Acc Age						
			7 Day	28 Day	Run	Avg 3
3/8/2017	5.50	0.60	3640	5290		
3/14/2017	8.00	1.50	3240	5300		
3/16/2017	9.00	2.20	3110	4830	5140	
3/23/2017	8.00	1.60	3540	5410	5180	
3/27/2017	9.00	1.70	2480	5090	5110	
3/29/2017	9.00	1.50	3000	4660	5050	
3/30/2017	9.50	1.50	2310	4370	4710	
3/31/2017	8.50	1.50	3580	5050	4700	
4/24/2017	4.00	1.60	3760	5660	5030	
4/28/2017	3.50	1.40	4090	5690	5470	
5/2/2017	5.00	2.40		6000	5780	
5/19/2017	6.00	1.70		4930	5540	
6/13/2017	5.50	4.00	3070	4560	5160	
6/26/2017	7.00	1.90		4400	4630	
6/30/2017	6.00	1.30	3060	4990	4650	
7/31/2017	4.00	1.50	3380	5050	4810	
8/3/2017	5.00	1.00	3420	5500	5180	
8/28/2017	2.50	2.00	4530	6020	5520	
8/30/2017	7.50	2.50	4030	5040	5520	
9/8/2017	6.00	1.40	2810	4500	5190	
9/14/2017	3.75	1.50	3960	6340	5300	
10/17/2017	5.00	2.00	4390	5500	5450	
10/17/2017	4.00	2.00	4420	6300	6050	
10/18/2017	5.50	1.70	2820	4710	5500	
10/20/2017	5.00	2.00	4720	6630	5880	
10/26/2017	7.50	2.20	2400	4270	5200	
11/15/2017	4.50	2.00	3240	4610	5170	
11/20/2017	5.00	1.60	3270	5060	4650	
11/21/2017	2.00	1.60	4760	6310	5330	
11/22/2017	4.00	2.70	4290	6470	5950	



REVIEW IS FOR GENERAL COMPLIANCE WITH
CONTRACT DOCUMENTS. ANY ACTION SHOWN IS
SUBJECT TO THE REQUIREMENTS OF THE
DRAWINGS AND SPECIFICATIONS.

Signed: Richard A. Kinsey

For APPROVAL

03/13/2018 10:19:29 AM

Interior Walls /
SOMD
03 3000



Date Issued: 3/13/2018

Submittal No. 46839

Customer: GREATER GA CONCRETE LLC

Project: The Living Building @ GT

Plant: ARMOUR DRIVE

Argos
1511 Ronald Reagan Blvd
Cumming GA 30041

Telephone: (912) 236-4446
Fax: (912) 238-9641
Cell: (912) 508-8156

Mix Code: 40CNC577		Mix Code must be used when ordering concrete.				
Description	Mfg. Source	Tradename	ASTM	Spec. Gravity	oz/cwt	Weight (lb)
Type I-II	Argos	Argos Roberta T-I/II	C150	3.15		435
Fly Ash C	Boral	Boral Scherer T-C	C 618	2.71		145
# 67	Hanson Aggregates	Hanson Lithonia #67	C 33	2.63		1,765
Natural Sand	Lambert	Lambert Shorter NS		2.64		915
Manufactured Sand	Hanson Aggregates	Hanson Lithonia 10SM	C 33	2.62		392
City	City	WATER	C-94	1.00		292
Type A Water Reducer	WR Grace	WR Grace Zyla 620	C 494	1.09	4.00	
Specified F'c : 4,000 psi @ 28 days		Designed Unit Weight:	146.1 lbs./cu.ft.	TOTAL 3,945		
Specified Slump 4.00 +/- 1.00 in.		Designed W/C + P Ratio:	0.50			
Specified Air: 1.50 +/- 1.50 %		Designed Volume:	27.00 cu.ft.			

NOTES:

Argos has no knowledge or authority regarding where this mix is to be placed; therefore, it is the responsibility of the project architect, engineer, and/or contractor to ensure that the above designed mix parameters of compressive strength, water-to-cementitious ratio (W/C+P), cement content, and air content are appropriate for the anticipated environmental conditions (ie. ACI-318 sections 4.1-4.3, and local Building Codes).

Customer assumes total responsibility for concrete placement, finishing, initial and final curing, placement of joints at proper spacing, and any aesthetic concerns/issues (such as cracks, discoloration, etc.) that may arise in the plastic and hardened state.

Customer assumes responsibility for any performances issues (strength, aesthetic, durability, air entrainment etc.) as a result of water added to concrete at the project site that exceeds the w/c+p.

Designed mix cementitious content, is stated as a minimum, and Argos reserves the right to increase cementitious content.

Chemical admixtures are added in accordance with the manufacturer's recommendations. Argos reserves the right to adjust these dosages to meet the changes in jobsite demands.

All raw materials are subject to change depending on availability. All substitutes are guaranteed to meet or exceed projects performance specification requirements.

Argos may use admixtures or procedures not listed above to control the mixture during Hot or Cold weather, for pumping, long hauls, or other special applications, unless restricted in writing by the client.

In accordance with ASTM C-94, please copy our office with all test results obtained on this concrete by independent testing laboratories.

COMMENTS:

Ryan Parker
QA Manager

Date: 3/13/2018

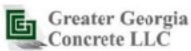


Mix Name: 40CNC577

Units : US

STRENGTH SUMMARY, Compression Either 4" x 8" Or 6" x 12"						
No. Of Tests	Avg Slump	Avg Air	Strengths		Std Dev	ACI318 Req'd
			Avg 7 Day	Avg 28 Day		
19	3.98	1.78	4070	6190	620	5070

DETAILED STRENGTH, Compression Either 4" x 8" Or 6" x 12"						
Date	Slump	Air	Strengths		Acc Age	
			7 Day	28 Day	Run	Avg 3
10/12/2016	3.00	1.60	4410	6370		
10/12/2016	3.00	1.50	3940	5860		
10/19/2016	3.00	0.90	4220	6470	6230	
10/19/2016	4.00	1.40	3590	5430	5920	
10/26/2016	5.00	0.80	3800	6050	5990	
11/21/2016	3.75	2.00	5140	7270	6250	
12/7/2016	3.00	1.00	4570	6490	6600	
12/10/2016	4.50	1.80	4440	6940	6900	
12/14/2016	3.50	1.70	4330	6440	6630	
12/27/2016	3.00	1.10	4160	6030	6470	
2/6/2017	3.00	2.00	3500	6130	6200	
2/20/2017	7.00	2.00	3080	5510	5890	
2/22/2017		2.00	4270	6720	6120	
2/22/2017		2.40	3340	5090	5770	
2/23/2017		2.50	4070	6600	6140	
2/28/2017		2.60	4380	6400	6030	
3/10/2017		2.40	4470	6710	6570	
3/10/2017		2.00	3970	5810	6310	
3/23/2017	6.00	2.20	3710	5290	5930	



REVIEW IS FOR GENERAL COMPLIANCE WITH
CONTRACT DOCUMENTS. ANY ACTION SHOWN IS
SUBJECT TO THE REQUIREMENTS OF THE
DRAWINGS AND SPECIFICATIONS.

Signed: Richard A. Kinsley

For APPROVAL

03/13/2018 10:19:44 AM

Exterior Ret Walls
03 3000



Date Issued: 3/13/2018

Submittal No. 46839

Customer: GREATER GA CONCRETE LLC

Project: The Living Building @ GT

Plant: ARMOUR DRIVE

Argos
1511 Ronald Reagan Blvd
Cumming GA 30041

Telephone: (912) 236-4446
Fax: (912) 238-9641
Cell: (912) 508-8156

Mix Code: 45JAC0089		Mix Code must be used when ordering concrete.				
Description	Mfg. Source	Tradename	ASTM	Spec. Gravity	oz/cwt	Weight (lb)
Type I-II	Argos	Argos Roberta T-I/II	C150	3.15		473
Fly Ash C	Boral	Boral Scherer T-C	C 618	2.71		157
# 67	Hanson Aggregates	Hanson Lithonia #67	C 33	2.63		1,765
Natural Sand	Lambert	Lambert Shorter NS		2.64		704
Manufactured Sand	Hanson Aggregates	Hanson Lithonia 10SM	C 33	2.62		470
City	City	WATER	C-94	1.00		284
Air Entrainment	WR Grace	WR Grace Darex II	C 260	1.00	0.32	
Type A Water Reducer	WR Grace	WR Grace Zyla 620	C 494	1.09	4.00	
Specified F'c : 4,500 psi @ 28 days		Designed Unit Weight:	142.7 lbs./cu.ft.	TOTAL 3,853		
Specified Slump 4.00 +/- 1.00 in.		Designed W/C + P Ratio:	0.45			
Specified Air: 4.50 +/- 1.50 %		Designed Volume:	27.00 cu.ft.			

NOTES:

Argos has no knowledge or authority regarding where this mix is to be placed; therefore, it is the responsibility of the project architect, engineer, and/or contractor to ensure that the above designed mix parameters of compressive strength, water-to-cementitious ratio (W/C+P), cement content, and air content are appropriate for the anticipated environmental conditions (ie. ACI-318 sections 4.1-4.3, and local Building Codes).

Customer assumes total responsibility for concrete placement, finishing, initial and final curing, placement of joints at proper spacing, and any aesthetic concerns/issues (such as cracks, discoloration, etc.) that may arise in the plastic and hardened state.

Customer assumes responsibility for any performance issues (strength, aesthetic, durability, air entrainment etc.) as a result of water added to concrete at the project site that exceeds the w/c+p.

Designed mix cementitious content, is stated as a minimum, and Argos reserves the right to increase cementitious content.

Chemical admixtures are added in accordance with the manufacturer's recommendations. Argos reserves the right to adjust these dosages to meet the changes in jobsite demands.

All raw materials are subject to change depending on availability. All substitutes are guaranteed to meet or exceed projects performance specification requirements.

Argos may use admixtures or procedures not listed above to control the mixture during Hot or Cold weather, for pumping, long hauls, or other special applications, unless restricted in writing by the client.

In accordance with ASTM C-94, please copy our office with all test results obtained on this concrete by independent testing laboratories.

COMMENTS:

Ryan Parker
QA Manager

Date: 3/13/2018

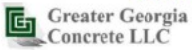


Mix Name: 45JAC0089

Units : US

STRENGTH SUMMARY, Compression Either 4" x 8" Or 6" x 12"						
No. Of Tests	Avg Slump	Avg Air	Strengths		Std Dev	ACI318 Req'd
			Avg 7 Day	Avg 28 Day		
30	5.56	4.61	3960	5820	710	5640

DETAILED STRENGTH, Compression Either 4" x 8" Or 6" x 12"						
Date	Slump	Air	Strengths		Acc Age	
			7 Day	28 Day	Run	Avg 3
7/30/2015		4.00	4480	6800		
8/3/2015		4.60	3600	4940		
8/6/2015		3.25	4980	6290	6010	
8/20/2015	6.25	4.60	4180	6690	5970	
8/20/2015	6.00	4.60	3970	6310	6430	
9/12/2015	4.75	4.50	3760	5280	6090	
9/25/2015	7.00	5.50	4810	6510	6030	
10/9/2015	6.50		3350	5140	5640	
10/9/2015	5.50		3200	5070	5570	
10/9/2015	5.50		4000	5640	5280	
10/23/2015	5.00	3.75	4600	6990	5900	
10/23/2015	8.50	5.75	2840	4820	5820	
10/28/2015	5.00		3920	4800	5540	
10/28/2015	4.50		4310	5380	5000	
11/6/2015	6.50		4120	5900	5360	
11/23/2015	5.00		4680	6880	6050	
11/23/2015	5.00		3110	5410	6070	
12/10/2015	7.00	5.00	3120	4950	5750	
12/11/2015	5.00		4150	6230	5530	
12/15/2015	5.00		3620	5780	5650	
12/17/2015	5.50		4320	6490	6160	
12/21/2015	7.00		3690	5570	5940	
1/13/2016	6.00		2470	4850	5630	
2/19/2016	4.75	5.75	3950	6440	5620	
3/7/2016	5.00	4.20	4210	6010	5760	
3/7/2016	5.00	4.20	4470	6740	6400	
3/7/2016	5.50	4.40	4350	6130	6290	
8/12/2016	5.00	5.00	3700	4990	5950	
9/21/2016	4.50	5.30	4660	5860	5660	
12/15/2016	4.00	4.00	4270	5870	5570	



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DRAWINGS AND SPECIFICATIONS.

Signed: Richard A. Kinsey

For APPROVAL

03/13/2018 10:19:57 AM

**Columns
03 3000**



Date Issued: 3/13/2018

Submittal No. **46839**

Customer: GREATER GA CONCRETE LLC

Project: The Living Building @ GT

Plant: ARMOUR DRIVE

Argos
1511 Ronald Reagan Blvd
Cumming GA 30041

Telephone: (912) 236-4446
Fax: (912) 238-9641
Cell: (912) 508-8156

Mix Code: 50CNC972		Mix Code must be used when ordering concrete.				
Description	Mfg. Source	Tradename	ASTM	Spec. Gravity	oz/cwt	Weight (lb)
Type I-II	Argos	Argos Roberta T-I/II	C150	3.15		488
Fly Ash C	Boral	Boral Scherer T-C	C 618	2.71		162
# 67	Hanson Aggregates	Hanson Lithonia #67	C 33	2.63		1,765
Natural Sand	Lambert	Lambert Shorter NS		2.64		876
Manufactured Sand	Hanson Aggregates	Hanson Lithonia 10SM	C 33	2.62		370
City	City	WATER	C-94	1.00		284
Type F High Range Water Reducer	Grace	WR Grace Adva 198	C494	1.07	3.20	
Type A Water Reducer	WR Grace	WR Grace Zyla 620	C 494	1.09	4.00	
Specified F'c :	5,000 psi @ 28 days	Designed Unit Weight:	146.1	lbs./cu.ft.	TOTAL	3,945
Specified Slump	7.00 +/- 1.00 in.	Designed W/C + P Ratio:	0.44			
Specified Air:	1.50 +/- 1.50 %	Designed Volume:	27.00	cu.ft.		

NOTES:

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In accordance with ASTM C-94, please copy our office with all test results obtained on this concrete by independent testing laboratories.

COMMENTS:

Ryan Parker
QA Manager

Date: 3/13/2018

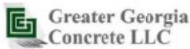


Mix Name: 50CNC972

Units : US

STRENGTH SUMMARY, Compression Either 4" x 8" Or 6" x 12"						
No. Of Tests	Avg Slump	Avg Air	Strengths		Std Dev	ACI318 Req'd
			Avg 7 Day	Avg 28 Day		
15	4.68	2.13	5430	7480	940	7040

DETAILED STRENGTH, Compression Either 4" x 8" Or 6" x 12"						
Date	Slump	Air	Strengths		Acc Age	
			7 Day	28 Day	Run	Avg 3
9/24/2015	4.50	1.60	5580	7980		
10/1/2015	4.50	2.70	4970	7430		
10/16/2015	4.00	2.80	4570	7460	7620	
10/19/2015	1.50	2.00	6320	6810	7230	
12/11/2015	4.00	2.80	6010	8520	7600	
1/14/2016	3.50	2.00	5790	7840	7720	
2/12/2016	6.50	1.20	5460	7540	7960	
2/13/2016	5.00	1.20	5410	6930	7440	
2/15/2016	3.50	2.30	7490	9690	8050	
1/26/2017	4.50	2.50	5620	6570	7730	
1/27/2017	4.75	2.30	4890	7030	7760	
2/1/2017	5.00	2.20	4970	6840	6810	
2/3/2017	6.00	1.80	4480	5890	6590	
2/15/2017	5.50	2.30	3720	7330	6690	
2/20/2017	7.50	2.30	6140	8380	7200	



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DRAWINGS AND SPECIFICATIONS.

Signed: Richard A. Kinsey

For APPROVAL

03/13/2018 10:20:11 AM

Paving
03 3000



Date Issued: 3/13/2018

Submittal No. 46839

Customer: GREATER GA CONCRETE LLC

Project: The Living Building @ GT

Plant: ARMOUR DRIVE

Argos
1511 Ronald Reagan Blvd
Cumming GA 30041

Telephone: (912) 236-4446
Fax: (912) 238-9641
Cell: (912) 508-8156

Mix Code: 40CAC205		Mix Code must be used when ordering concrete.				
Description	Mfg. Source	Tradename	ASTM	Spec. Gravity	oz/cwt	Weight (lb)
Type I-II	Argos	Argos Roberta T-I/II	C150	3.15		473
Fly Ash C	Boral	Boral Scherer T-C	C 618	2.71		157
# 57	Hanson Aggregates	Hanson Lithonia #57	C 33	2.63		1,766
Natural Sand	Lambert	Lambert Shorter NS		2.64		691
Manufactured Sand	Hanson Aggregates	Hanson Lithonia 10SM	C 33	2.62		461
City	City	WATER	C-94	1.00		284
Air Entrainment	WR Grace	WR Grace Darex II	C 260	1.00	0.32	
Type A Water Reducer	WR Grace	WR Grace Zyla 620	C 494	1.09	4.00	
Specified F'c : 4,000 psi @ 28 days		Designed Unit Weight:	141.9 lbs./cu.ft.	TOTAL 3,831		
Specified Slump 4.00 +/- 1.00 in.		Designed W/C + P Ratio:	0.45			
Specified Air: 4.50 +/- 1.50 %		Designed Volume:	27.00 cu.ft.			

NOTES:

Argos has no knowledge or authority regarding where this mix is to be placed; therefore, it is the responsibility of the project architect, engineer, and/or contractor to ensure that the above designed mix parameters of compressive strength, water-to-cementitious ratio (W/C+P), cement content, and air content are appropriate for the anticipated environmental conditions (ie. ACI-318 sections 4.1-4.3, and local Building Codes).

Customer assumes total responsibility for concrete placement, finishing, initial and final curing, placement of joints at proper spacing, and any aesthetic concerns/issues (such as cracks, discoloration, etc.) that may arise in the plastic and hardened state.

Customer assumes responsibility for any performance issues (strength, aesthetic, durability, air entrainment etc.) as a result of water added to concrete at the project site that exceeds the w/c+p.

Designed mix cementitious content, is stated as a minimum, and Argos reserves the right to increase cementitious content.

Chemical admixtures are added in accordance with the manufacturer's recommendations. Argos reserves the right to adjust these dosages to meet the changes in jobsite demands.

All raw materials are subject to change depending on availability. All substitutes are guaranteed to meet or exceed projects performance specification requirements.

Argos may use admixtures or procedures not listed above to control the mixture during Hot or Cold weather, for pumping, long hauls, or other special applications, unless restricted in writing by the client.

In accordance with ASTM C-94, please copy our office with all test results obtained on this concrete by independent testing laboratories.

COMMENTS:

Ryan Parker
QA Manager

Date: 3/13/2018



Mix Name: 40CAC205

Units : US

STRENGTH SUMMARY, Compression Either 4" x 8" Or 6" x 12"						
Strengths						
No. Of Tests	Avg Slump	Avg Air	Avg 7 Day	Avg 28 Day	Std Dev	ACI318 Req'd
30	4.94	4.61	4090	5750	690	5120

DETAILED STRENGTH, Compression Either 4" x 8" Or 6" x 12"						
Date	Slump	Air	Strengths		Acc Age	
			7 Day	28 Day	Run	Avg 3
6/27/2016	5.00	4.50	4670	6800		
7/5/2016	6.00	1.50	3620	6510		
7/15/2016	5.00		3920	5190	6170	
7/21/2016	6.50		3210	4620	5440	
7/25/2016	5.00		4870	6740	5510	
7/27/2016	5.00	5.40	3070	5050	5470	
7/28/2016	5.00	1.70	4900	6860	6220	
7/29/2016	5.00	2.20	4230	5500	5800	
7/29/2016	4.50	6.50	3400	4730	5700	
8/3/2016	6.00	6.00	3600	4740	4990	
8/4/2016	5.00	5.50	3080	5400	4960	
8/5/2016	5.00	3.50	4840	6410	5520	
8/8/2016	5.00		4990	5780	5870	
8/11/2016	6.00	1.90	4240	5350	5850	
8/12/2016	5.00	6.00	4130	5090	5410	
8/16/2016	5.00	3.00	4170	5430	5290	
8/18/2016	5.00	2.20	6120	6880	5800	
11/21/2016	4.50	6.10	4110	5660	5990	
11/21/2016	2.50	5.00	4570	6100	6220	
12/2/2016	4.25	5.50	3880	5640	5800	
1/14/2017	5.00	4.50	4550	5640	5790	
1/14/2017	5.00	4.90	4290	5550	5610	
1/16/2017	3.75	4.70	4050	5780	5660	
2/9/2017	4.50	6.00	4370	7000	6110	
4/20/2017	4.00	2.90	4490	6210	6330	
7/27/2017	5.00	3.90	3070	5010	6080	
8/5/2017	5.00	4.80	4490	5810	5680	
9/20/2017	6.00	7.50	3250	5970	5600	
9/20/2017	5.75	7.80	2860	6000	5930	
9/20/2017	4.00	6.40	3590	4930	5630	



Cement Mill Test Report

Month of Issue: January 2018

Plant:	Calera, AL
Product:	Portland Cement Type I/II (MH)
Silo:	17, 18J, 19, 20
Manufactured:	December 2017

ASTM C150 and AASHTO M85 Standard Requirements

CHEMICAL ANALYSIS			PHYSICAL ANALYSIS		
Item	Spec limit	Test Result	Item	Spec limit	Test Result
Rapid Method, X-Ray (C114)			Air content of mortar (%) (C185)	12 max	7
SiO ₂ (%)	---	19.6	Blaine Fineness (m ² /kg) (C204)	260 - 430	393
Al ₂ O ₃ (%)	6.0 max	4.6	-325 (%) (C430)	---	97.2
Fe ₂ O ₃ (%)	6.0 max	3.1	Autoclave expansion (%) (C151)	0.80 max	0.09
CaO (%)	---	62.9	Compressive strength (MPa, [PSI]) (C109)		
MgO (%)	6.0 max	3.3	1 day		15.0 [2180]
SO ₃ (%)	3.0 max *	3.1	3 days	12.0 [1740] min	26.5 [3840]
Loss on Ignition (%)**	3.5 max	2.8	7 days	19.0 [2760] min	33.6 [4870]
Insoluble residue (%)	1.5 max	---	28 days (Reflects previous month's data)	---	45.0 [6530]
CO ₂ (%)	---	1.8	Time of setting (minutes)		
Limestone (%)	5.0 max	4.1	Vicat Initial (C191)	45 - 375	107
CaCO ₃ in Limestone (%)	70 min	98	Heat of Hydration (kJ/kg) (C1702)		
Inorganic Process Addition (Baghouse Dust)	5.0 max	0.0	3 days (for information only)***	---	306
Adjusted Potential Phase Composition (C150)			Mortar Bar Expansion (%) (C1038)***	0.020 max	0.005
C3S (%)	---	53	Density (C188)		3.15
C2S (%)	---	16			
C3A (%)	8 max	7			
C4AF (%)	---	9			
C3S+4.75*C3A (%)	100 max	86			
ASTM C150 and AASHTO M85 Optional Chemical Requirements:					
NaEq (%)	0.60 max	0.43			

* May exceed 3.0% SO₃ maximum based on our C1038 results of < 0.020% expansion at 14 days.

** Loss on Ignition max of 3.5% when limestone is an ingredient

*** Test result represents most recent value and is provided for information only.

We certify that the above described cement, at the time of shipment, meets the chemical and physical requirements of applicable FDOT Section 921, ALDOT, GDOT, TDOT, MDOT, INDOT, La DOTD, NCDOT, ODOT, VDOT, SCDOT, AHTD Specifications for TYPE I/II (MH);

ASTM C150 & AASHTO M85 STANDARD SPECIFICATIONS FOR TYPE I/II (MH) CEMENT;

ASTM C150 & AASHTO M85 OPTIONAL CHEMICAL REQUIREMENTS FOR TYPE I/II (MH) LOW ALKALI CEMENT.

Certified By:

Argos USA - Roberta
8039 Highway 25, Calera, AL 35040
Phone: 205.668.2721

Nicholas T. Ewing - Quality Coordinator

Report created: 01/16/2018



Materials Testing & Research Facility

2650 Old State Hwy 113

Taylorsville, GA 30178

770-684-0102

ASTM C618 / AASHTO M295 Testing of Scherer Fly Ash

Sample Date: 12/21 - 1/20/18

Report Date: 2/27/2018

Sample Type: Monthly

MTRF ID: 238SR

Sample ID:

Chemical Analysis	Results	ASTM Limit Class F/C	AASHTO Limit Class F/C
Silicon Dioxide (SiO ₂)	<u>37.92</u> %		
Aluminum Oxide (Al ₂ O ₃)	<u>17.81</u> %		
Iron Oxide (Fe ₂ O ₃)	<u>5.64</u> %		
Sum (SiO ₂ +Al ₂ O ₃ +Fe ₂ O ₃)	<u>61.37</u> %	70.0/50.0 min	70.0/50.0 min
Sulfur Trioxide (SO ₃)	<u>1.66</u> %	5.0 max	5.0 max
Calcium Oxide (CaO)	<u>25.31</u> %		
Magnesium Oxide (MgO)	<u>5.97</u> %		
Sodium Oxide (Na ₂ O)	<u>1.71</u> %		
Potassium Oxide (K ₂ O)	<u>0.43</u> %		
Sodium Oxide Equivalent (Na ₂ O+0.658K ₂ O)	<u>1.99</u> %		
Moisture	<u>0.04</u> %	3.0 max	3.0 max
Loss on Ignition	<u>0.22</u> %	6.0 max	5.0 max
Physical Analysis			
Fineness, % retained on 45-μm sieve	<u>21.02</u> %	34 max	34 max
Strength Activity Index - 7 or 28 day requirement			
7 day, % of control	<u>95</u> %	75 min	75 min
28 day, % of control	<u>94</u> %	75 min	75 min
Water Requirement, % control	<u>95</u> %	105 max	105 max
Autoclave Soundness	<u>0.01</u> %	0.8 max	0.8 max
Density	<u>2.63</u>		

Boral Resources certifies that pursuant to current ASTM C618 protocol for testing, the test data listed herein was generated by applicable ASTM methods and meets the requirements of ASTM C618.


Doug Rhodes, CET
Facility Manager





Basic Quality Statistical Summary Report

Plant E106-LITHONIA PINE MOUNTAIN
Product 030007-#57
Specification GADOT 57
Period 12/16/2017 - 01/15/2018

Sieve/Test	Tests	Average	St Dev	Target	Specification
1 1/2" (37.5mm)	44	100.0	0.00	100-100	100-100
1" (25mm)	44	98.1	0.49	97-100	95-100
3/4" (19mm)	44	79.6	3.90		
1/2" (12.5mm)	44	37.5	5.78	32-48	25-60
3/8" (9.5mm)	44	20.0	5.44		
#4 (4.75mm)	44	3.1	1.47	0-5	0-10
#8 (2.36mm)	44	1.2	0.46	0-2	0-5
Pan	44	0.00	0.000		



Basic Quality Statistical Summary Report

Plant E106-LITHONIA PINE MOUNTAIN
Product 030008-#67 Stone
Specification #67 Stone
Period 12/16/2017 - 01/15/2018

Sieve/Test	Tests	Average	St Dev	Target	Specification
1" (25mm)	13	100.0	0.00	100-100	100-100
3/4" (19mm)	13	96.0	0.98	93-100	90-100
1/2" (12.5mm)	13	58.8	4.56		
3/8" (9.5mm)	13	30.0	2.11	23-45	20-55
#4 (4.75mm)	13	3.5	0.50	0-5	0-15
#8 (2.36mm)	13	1.4	0.10	0-2	0-5
Pan	13	0.0	0.00		



Basic Quality Statistical Summary Report

Plant E106-LITHONIA PINE MOUNTAIN
Product 030021-Standard Concrete Sand
Specification GDOT Concrete Sand
Period 12/16/2017 - 01/15/2018

Sieve/Test	Tests	Average	St Dev	Target	Specification
3/8" (9.5mm)	32	100	0.0	100-100\100	100-100
1/4" (6.3mm)	32	100	0.0	100-100\100	100-100
#4 (4.75mm)	32	100	0.0	97-100\100	95-100
#8 (2.36mm)	32	85	0.8	86	
#16 (1.18mm)	32	66	0.8	51-90\65	45-95
#30 (0.6mm)	32	45	1.1		
#50 (0.3mm)	32	17	3.5	12-24\20	8-30
#100 (0.15mm)	32	6	1.1	2-9\6	1-10
#200 (75µm)	32	2.2	0.43	0-3\3	0-4
Pan	32	0.0	0.00		

ARGOS USA**TECHNICAL CENTER****FINE AGGREGATE ANALYSIS - ASTM C136**SAMPLE DATE: **1/3/17**

SUPPLIER: Lambert Materials/Wiregrass Shorter, AL

TEST DATE: **1/2/17**

PLANT: Armour Dr.

TYPE: Natural

SCREEN	WT. RET.	TOTAL % RET	NET % RET	% PASS	ASTM % PASS	GA DOT % PASS	FLDOT % PASS	ALDOT % PASS
NO.4	0.0	0.0	0.0	100.0	95to100	95to100	95to100	95to100
NO.8	19.0	5.0	5.0	95.0	80to100		85to100	80to100
NO.16	68.4	18.0	13.0	82.0	50to85	45to95	65to97	50to90
NO.30	193.8	51.0	33.0	49.0	25to60		25to70	
NO.50	281.2	74.0	23.0	26.0	5to30	8to30	5to35	5to30
NO.100	345.8	91.0	17.0	9.0	0to10	1to10	0to7	0to10
NO.200	376.2	99.0	8.0	1.0	0to3	0to3	0to3	0to3
PAN	380.0		1.0					
	FM	2.39						

WASHED 200: _____ %

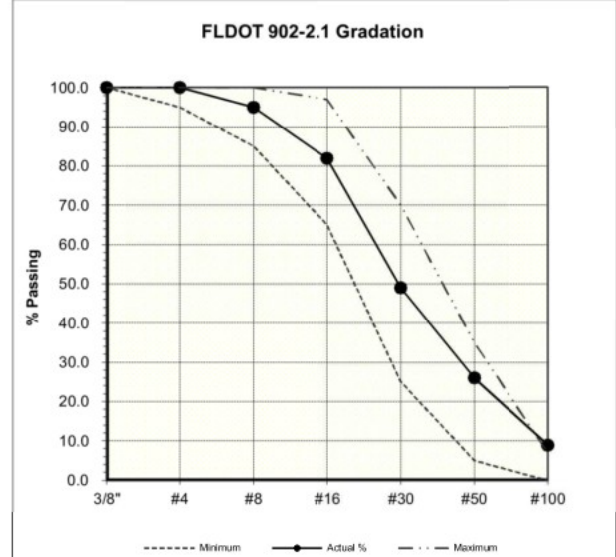
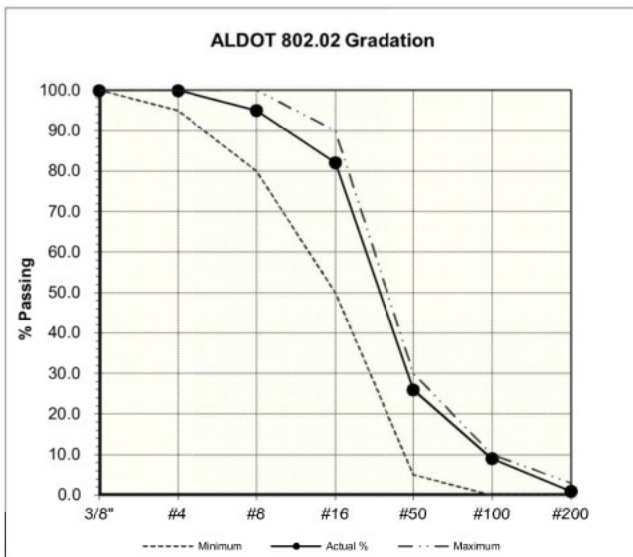
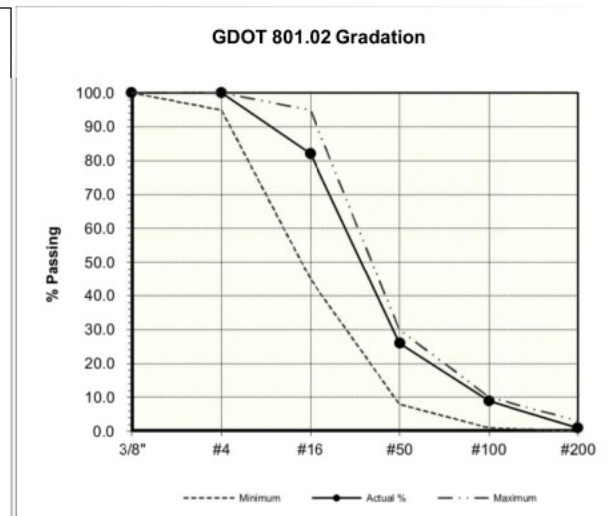
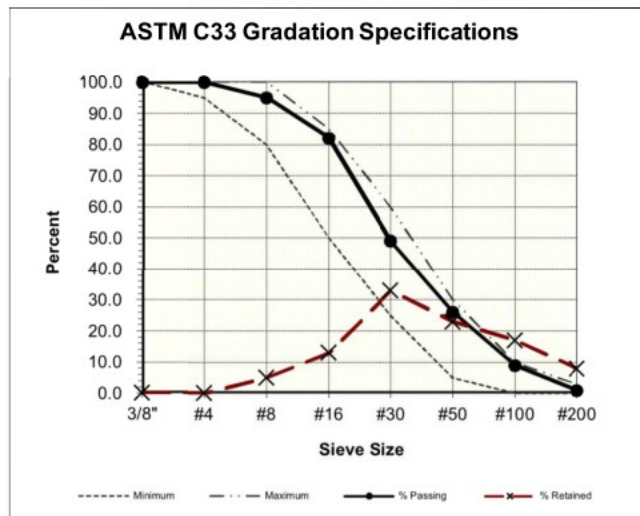
ORGANICS PLATE #: **<1**

Sp. Grav: _____

SAND EQUIV: **93**

ABSORPTION: _____ %

MEETS GDOT GRADATION SPECIFICATIONS
DOES NOT MEET FLDOT GRADATION SPECIFICATIONS
MEETS ASTM C33 GRADATION SPECIFICATIONS

MEETS ALDOT GRADATION SPECIFICATIONSPerformed by: RPReviewed by: T. Vines, PG Date: 2/6/17



62 Whittemore Avenue
Cambridge, Massachusetts 02140
USA

GCPat.com

G. Terry Harris Sr., FACI
Director, Technical Service - Americas
+1 904 591 8929 Mobile
+1 813 354 4542 Facsimile
Terry.Harris@GCPat.com

April 5, 2017

Ryan Parker
ARGOS USA
Argos Technical Center
1511 Ronald Reagan Blvd
Cumming, GA 30041

Project Name: General Certification
Product Selected: ADVA® 198

This is to certify that the ADVA 140M, a High Range Water Reducer, as manufactured and supplied by GCP Applied Technologies Inc., is formulated to comply with the Specifications for Chemical Admixtures for Concrete, ASTM: C494, Type A, F, AASHTO: M194, Type A, F and complies with the Specification for Chemical Admixtures for Use in Producing Flowing Concrete, ASTM C 1017.

ADVA 140M does not contain calcium chloride or chloride containing compounds as a functional ingredient. Chloride ions may be present in trace amounts contributed from the process water used in manufacturing, the maximum chloride ion concentration for ADVA 140M is 500ppm.

The foregoing is in addition to and not in substitution for our standard Conditions of Sale attached.

Sincerely,

A handwritten signature in blue ink, reading "G. Terry Harris Sr.", written over a light blue horizontal line.

G. Terry Harris Sr.
Director, Technical Service, Americas



PATRICIA SLIMP
MY COMMISSION # FF 109459
EXPIRES: April 2, 2018
Bonded Thru Budget Notary Services

A handwritten signature in blue ink, reading "Patricia Slimp", written over a light blue horizontal line.

PRODUCT DATA SHEET



ADVA® 198

High-range water-reducing admixture

ASTM C494 Type A and F

Product Description

ADVA® 198 superplasticizer is a polycarboxylate-based high-range water-reducing admixture specifically formulated to meet the needs of the concrete industry. It is a low viscosity liquid, which has been formulated by the manufacturer for use as received.

ADVA® 198 superplasticizer is manufactured under closely controlled conditions to provide uniform, predictable performance and is formulated to comply with specifications for Chemical Admixtures for Concrete, ASTM Designation C494 as a Type A and F admixture. The product does not contain intentionally added calcium chloride. One gallon weighs approximately 9.0 lbs (1.1 kg/L).

Uses

ADVA® 198 superplasticizer produces concrete with extremely workable characteristics referred to as high slump. It also allows concrete to be produced with very low water/cement ratios for high strength.

While ADVA 198 superplasticizer is ideal for use in any concrete where it is desired to minimize the water/cementitious ratio yet maintain workability, it is primarily intended for use in ready-mix concrete, but may also be used in other applications such as precast concrete and self-consolidating concrete.

Addition Rates

ADVA® 198 superplasticizer addition rates can vary with type of application, but will normally range from 2 to 15 fl oz/100 lbs (130

to 980 mL/100 kg) of cementitious. In most instances, the addition of 3 to 6 fl oz/100 lbs (195 to 375 mL/100 kg) of cementitious will be sufficient. At a given water/cementitious ratio, the slump required for placement can be controlled by varying the addition rate. Should conditions require using more than the recommended addition rates, please consult your GCP representative.

ADVA 198 superplasticizer dosage requirements may also be affected by mix design, cementitious content and aggregate gradations. Please consult with your GCP Applied Technologies representative for more information and assistance.

Compatibility with Other Admixtures and Batch Sequencing

ADVA® 198 superplasticizer is compatible with most GCP admixtures as long as they are added separately to the concrete mix.

Product Advantages

- Highly efficient, producing high slump concrete at very low dosages
- Provides a combination of slump life with near neutral set time
- Consistent air entrainment
- Consistent performance across cement chemistries
- Concrete finishes easily without stickiness, spotty set or tearing



However, ADVA products are not recommended for use in concrete containing naphthalene-based admixtures including Daracem® 19 and Daracem 100. In general, it is recommended that ADVA 198 superplasticizer be added to the concrete mix near the end of the batch sequence for optimum performance. Different sequencing may be used if local testing shows better performance. Please see GCP Technical Bulletin TB-0110, *Admixture Dispenser Discharge Line Location and Sequencing for Concrete Batching Operations* for further recommendations. The product should not come in contact with any other admixture before or during batching.

Pretesting of the concrete mix should be performed before use and as conditions and materials change in order to assure compatibility with other admixtures, and to optimize dosage rates, addition times in the batch sequencing and concrete performance. For concrete that requires air entrainment, the use of an ASTM C260 air-entraining agent (such as Daravair® or Darex® product lines) is recommended to provide suitable air void parameters for freeze-thaw resistance. Please consult your GCP representative for guidance.

Packaging & Handling

ADVA® 198 superplasticizer is available in bulk, delivered by metered tank trucks, in 275 gal (1040 L) totes, and in 55 gal (208 L) drums.

It will begin to freeze at approximately 32°F (0°C), but will return to full strength after thawing and thorough agitation. In storage, and for proper dispensing, ADVA 198 superplasticizer should be maintained at temperatures above 32°F (0°C).

Dispensing Equipment

A complete line of accurate, automatic dispensing equipment is available.

gcpat.com | North America Customer Service: 1-877-4AD-MIX1 (1-877-423-6491)

We hope the information here will be helpful. It is based on data and knowledge considered to be true and accurate, and is offered for consideration, investigation and verification by the user, but we do not warrant the results to be obtained. Please read all statements, recommendations, and suggestions in conjunction with our conditions of sale, which apply to all goods supplied by us. No statement, recommendation, or suggestion is intended for any use that would infringe any patent, copyright, or other third party right.

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GCP Applied Technologies Inc., 62 Whittemore Avenue, Cambridge, MA 02140 USA.

In Canada, GCP Canada, Inc., 294 Clements Road, West, Ajax, Ontario, Canada L1S 3C6.

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62 Whittemore Avenue
Cambridge, Massachusetts 02140
USA
GCPat.com

G. Terry Harris Sr., FACI
Director, Technical Service - Americas
+1 904 591 8929 Mobile
+1 813 354 4542 Facsimile
Terry.Harris@GCPat.com

April 5, 2017

Ryan Parker
ARGOS USA
Argos Technical Center
1511 Ronald Reagan Blvd
Cumming, GA 30041

Project Name: General Certification
Product Selected: Darex® II AEA

This is to certify that the Darex II AEA, a Air-Entraining Agent, as manufactured and supplied by GCP Applied Technologies Inc., is formulated to comply with the Specifications for Chemical Admixtures for Concrete, ASTM: C260, AASHTO: M154.

Darex II AEA does not contain calcium chloride or chloride containing compounds as a functional ingredient. Chloride ions may be present in trace amounts contributed from the process water used in manufacturing, the maximum chloride ion concentration for Darex II AEA is 500ppm..

The foregoing is in addition to and not in substitution for our standard Conditions of Sale attached.

Sincerely,

A handwritten signature in blue ink, appearing to read "G. Terry Harris Sr.", written over a horizontal line.

G. Terry Harris Sr.
Director, Technical Service, Americas



PATRICIA SLIMP
MY COMMISSION # FF 109459
EXPIRES: April 2, 2018
Bonded Thru Budget Notary Services

A handwritten signature in blue ink, appearing to read "Patricia Slimp", written over a horizontal line.

PRODUCT DATA SHEET



DAREX® II AEA

Air-entraining admixture ASTM C260

Product Description

Darex® II AEA is an air-entraining admixture which generates a highly stable air void system for increased protection against damage from freezing and thawing, severe weathering, or de-icer chemicals. Darex II AEA is a complex mixture of organic acid salts in an aqueous solution specifically formulated for use as an air-entraining admixture for concrete and is manufactured under rigid control which provides uniform, predictable performance. It is supplied ready to- use and does not require pre-mixing with water. Darex II AEA is a dark brown liquid. One gallon weighs 8.7 lbs (1.04 kg/L). Darex II AEA complies to ASTM C260 *Standard Specifications for Air-Entraining Admixtures for Concrete*.

Uses

Darex II AEA is used in ready-mix and concrete products plants to improve air entrainment stability. It is particularly effective in maintaining air content during longer haul times. Darex II AEA performs well in conventional concrete and is effective in plasticizing mixes and with slag, lightweight, or manufactured aggregates which tend to produce harsh concrete.

Darex II AEA entrains air effectively with microsilica concrete and with fly ash concrete.

Performance

Darex II AEA disperses and generates millions of discrete semi-microscopic bubbles throughout the concrete composite. Once thoroughly mixed, the concrete contains a stable network of bubbles which act much like ball bearings increasing mobility, or plasticity, of the concrete. This adds workability to the mix and permits a reduction of water with no loss of slump. Placeability is improved. Bleeding, segregation and green shrinkage are minimized.

Through the purposeful entrainment of air, Darex II AEA markedly increases the durability of concrete to all exposures.

Product Advantages

- Air stability makes it particularly useful for longer transit times
- Produces excellent air void systems in concretes that are traditionally difficult to air entrain

Addition Rates

There is no standard addition rate for Darex II AEA. The amount to be used will depend upon the amount of air required under job conditions, usually in the range of 4% to 7%. Typical factors which might influence the amount of air entrained are temperature, cement, sand gradation and use of extra fine materials such as fly ash. Typical Darex II AEA addition rates generally range from ½ to 5 fl oz/100 lbs (30 to 320 mL/100 kg) of cement.

The air-entraining efficiency of Darex II AEA becomes even greater when used with water-reducing and set-retarding agents. This may allow a reduction of up to ¾ in the amount of Darex II AEA required for the specified air content.

Concrete Mix Adjustment

Entrained air results in increased yields with a consequent decrease in the cement content of the placed concrete. This condition calls for a mix adjustment, usually accomplished by reducing the fine aggregate content. This is in addition to the reduction in water content brought about by the increase in plasticity.

Compatibility with Other Admixtures and Batch Sequencing

Darex II AEA is compatible with most GCP admixtures as long as they are added separately to the concrete mix. In general, it is recommended that Darex II AEA be added to the concrete mix near the beginning of the batch sequence for optimum performance, preferably by "dribbling" on the sand. Different sequencing may be used if local testing shows better performance. Please see GCP Technical Bulletin TB-0110, *Admixture Dispenser Discharge Line Location and Sequencing for Concrete Batching Operations* for further recommendations. Darex II AEA should not be added directly to heated water.

Pretesting of the concrete mix should be performed before use, as conditions and materials change in order to assure compatibility, and to optimize dosage rates, addition times in the batch sequencing and concrete performance. Please consult your GCP Applied Technologies representative for guidance.

Packaging & Handling

Darex II AEA is available in bulk, delivered by metered tank trucks, totes and drums.

Darex II AEA will freeze at about 30 °F (-1 °C), but its air-entraining properties are completely restored by thawing and thorough mechanical agitation.

Dispensing Equipment

A complete line of accurate dispensing equipment is available. These dispensers can be located to discharge into the water line, the mixer, or on the sand.

Specifications

Concrete shall be air entrained concrete, containing 4% to 8% entrained air. The air contents in the concrete shall be determined by the pressure method (ASTM Designation C231), gravimetric method (ASTM Designation C138) or volumetric method (ASTM Designation C173). The air-entraining admixture shall be Darex II AEA as manufactured by GCP Applied Technologies, or equal. The air-entraining admixture shall be added at the concrete mixer or batching plant at approximately ¼ to 5 fl oz/100 lbs (30 to 320 mL/100 kg) of cement, or in such quantities as to give the specified air contents.

gcpat.com | North America Customer Service: 1-877-4AD-MIX1 (1-877-423-6491)

We hope the information here will be helpful. It is based on data and knowledge considered to be true and accurate, and is offered for consideration, investigation and verification by the user, but we do not warrant the results to be obtained. Please read all statements, recommendations, and suggestions in conjunction with our conditions of sale, which apply to all goods supplied by us. No statement, recommendation, or suggestion is intended for any use that would infringe any patent, copyright, or other third party right.

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GCP Applied Technologies Inc., 62 Whittemore Avenue, Cambridge, MA 02140 USA.

In Canada, 294 Clements Road, West, Ajax, Ontario, Canada L1S 3C6.

GCP0083

AIR-3-1216





62 Whittemore Avenue
Cambridge, Massachusetts 02140
USA

GCPat.com

G. Terry Harris Sr., FACI
Director, Technical Service - Americas
+1 904 591 8929 Mobile
+1 813 354 4542 Facsimile
Terry.Harris@GCPat.com

April 5, 2017

Ryan Parker
ARGOS USA
Argos Technical Center
1511 Ronald Reagan Blvd
Cumming, GA 30041

Project Name: General Certification
Product Selected: Zyla® 620

This is to certify that the ZYLA 620, a Water Reducer, as manufactured and supplied by GCP Applied Technologies Inc., is formulated to comply with the Specifications for Chemical Admixtures for Concrete, ASTM: C494, Type A, D, AASHTO: M194, Type A, D.

Zyla 620 does not contain calcium chloride or chloride containing compounds as a functional ingredient. Chloride ions may be present in trace amounts contributed from the process water used in manufacturing, the maximum chloride ion concentration for Zyla 620 is 500ppm.

The foregoing is in addition to and not in substitution for our standard Conditions of Sale attached.

Sincerely,

A handwritten signature in blue ink, appearing to read "G. Terry Harris Sr.", written over a horizontal line.

G. Terry Harris Sr.
Director, Technical Service, Americas



PATRICIA SLIMP
MY COMMISSION # FF 109459
EXPIRES: April 2, 2018
Bonded Thru Budget Notary Services

A handwritten signature in blue ink, appearing to read "Patricia Slimp", written over a horizontal line.

PRODUCT DATA SHEET



ZYLA® 620

Water-reducing admixture

ASTM C494 Type A and D

Product Description

ZYLA® 620 water-reducing admixture is a proprietary formulation incorporating polycarboxylate and highly purified specialty organic chemicals. ZYLA 620 promotes more complete hydration of Portland cement and has minimal effect on concrete air entrainment.

The ZYLA product line of water reducers is specially formulated to have a synergistic effect with polycarboxylate-based mid-range and high-range water reducers that improve flat-work finishability. This product contains no intentionally added chloride and as such is essentially chloride free. It is manufactured under rigid controls that provide uniform, predictable performance. ZYLA 620 is supplied as a light brown, low viscosity liquid, and is ready-to-use as received. One gallon weighs approximately 9.1 lbs (1.1 kg/L).

Uses

ZYLA 620 is used to produce concrete mixes with lower water content (typically 3% to 10% reduction), greater plasticity and higher compressive strengths. ZYLA 620 is suitable for normal weight and light weight concrete in ready-mix, precast and prestressed applications.

Finishability

The unique chemistry of ZYLA 620 positively impacts the finishability of concrete by providing a creamier and more homogenous texture, with more uniform and increased bleed rate relative to traditional lignin-based water reducers, although less than ZYLA 610. The influence of ZYLA 620 on the finishability of lean mixes has been particularly noticeable. Floating and troweling, by machine or hand, imparts a smooth, close tolerance surface.

Product Advantages

- No impact on concrete air content
- Better control of water reduction and setting times as compared to traditional lignin-based water reducers
- Synergistic performance of polycarboxylate-based mid-range and high-range water reducers, which includes water reduction and concrete strength and air control
- In the hardened state, improves the compressive and flexural strengths at all ages of concrete versus traditional lignin-based water reducers

Addition Rates

The addition rate range of 3 to 5 fl oz/100 lbs (195 to 325 mL/100 kg) of cement or cementitious is typical for most applications. However addition rates of 2 to 10 fl oz/100 lbs (130 to 652 mL/100 kg) of cement or cementitious may be used if local testing shows acceptable performance. Pretesting is required to determine the appropriate addition rate for desired performance. The optimum addition rate depends on the other concrete mixture components, job conditions, and desired performance characteristics.

Compatibility with Other Admixtures and Batch Sequencing

ZYLA 620 is compatible with most GCP admixtures as long as they are added separately to the concrete mix, usually through the water holding tank discharge line. However, ZYLA 620 is not recommended for use in concrete containing naphthalene-based admixtures including Daracem 19 and Daracem 100, and melamine-based admixtures including Daracem 65. In general, it is recommended that ZYLA 620 be added to the concrete mix near the end of the batch sequence for optimum performance. Different sequencing may be used if local testing shows better performance. Please see GCP Technical Bulletin TB-0110, *Admixture Dispenser Discharge Line Location and Sequencing for Concrete Batching Operations* for further recommendations.

Pretesting of the concrete mix should be performed before use, as conditions and materials change in order to assure compatibility, and to optimize dosage rates, addition times in the batch sequencing and concrete performance. For concrete that requires air entrainment, the use of an ASTM C260 air-entraining agent (such as Daravair or Darex product lines) is recommended to

provide suitable air void parameters for freeze-thaw resistance. Please consult your GCP Applied Technologies representative for guidance.

Packaging & Handling

ZYLA 620 is available in bulk, delivered by metered tank trucks, in totes, and in drums.

ZYLA 620 will freeze at about 28 °F (-2 °C), but will be completely uniform after thawing and thorough agitation.

Dispensing Equipment

A complete line of accurate, automatic dispensing equipment is available. ZYLA 620 may be introduced to the mix through the water holding tank discharge line. The ZYLA product line is formulated to be free of sediment.

Specifications

Concrete shall be designed in accordance with *Standard Recommended Practice for Selecting Proportions for Concrete*, ACI 211.

The water-reducing admixture shall be ZYLA 620, as manufactured by GCP Applied Technologies, or equal. The admixture shall not contain calcium chloride as a functional ingredient. ZYLA 620 will not promote corrosion of reinforcing steel embedded in concrete. It shall be used in strict accordance with the manufacturers' recommendations. The admixture shall comply with ASTM Designation C494, Type A and D water-reducing admixtures. Certification of compliance shall be made available on request.

The admixture shall be delivered as a ready-to-use liquid product and shall require no mixing at the batching plant or job site.

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We hope the information here will be helpful. It is based on data and knowledge considered to be true and accurate, and is offered for consideration, investigation and verification by the user, but we do not warrant the results to be obtained. Please read all statements, recommendations, and suggestions in conjunction with our conditions of sale, which apply to all goods supplied by us. No statement, recommendation, or suggestion is intended for any use that would infringe any patent, copyright, or other third party right.

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GCP Applied Technologies Inc., 62 Whittemore Avenue, Cambridge, MA 02140 USA.

In Canada, 294 Clements Road, West, Ajax, Ontario, Canada L1S 3C6.

GCP0083

ZYLA-620-1016



**The Living Building @ Ga Tech –
Atlanta, Ga
Dalney St, Atlanta, GA 30313**

Architect / Engineer: Lord Aeck Sargent
General Contractor: Skanska
Trade Contractor: Greater Georgia Concrete, LLC
Date: April 2, 2018

SUBMITTAL INCLUDES:

- **Admixture Red List Letter from Argos and GCP Applied Technologies for GGC Admixture product information**



Greater Georgia Concrete LLC

Greater Georgia Concrete LLC 4500 Peachtree Lakes Drive (o) 678-797-1901
www.ggcllc.com Berkeley Lake, GA 30096 (f) 678-797-1822



62 Whittemore Avenue
Cambridge, Massachusetts 02140
USA

GCPat.com

David J. Curreri
Director, Global Product Stewardship
+1 617-498-4915 Office
+1 617-834-7411 Mobile
David.j.curreri@gcpat.com

RE: Living Building Challenge – Red List (March 30, 2018)

FOR APPROVAL

04/02/2018 1:38:14 PM



REVIEW IS FOR GENERAL COMPLIANCE WITH
CONTRACT DOCUMENTS AND ACTION SHOWN IS
SUBJECT TO THE REQUIREMENTS OF THE
DRAWINGS AND SPECIFICATIONS.

Signed: Richard A. Kinsey

To whom it may concern:

The following Concrete Admixtures supplied by GCP Applied Technologies do not contain any intentionally added materials or chemicals listed on the Living Building Challenge (LBC) 3.1 Red List as referenced in this letter. This assessment is based on review of raw material supplier Safety Data Sheets and additional composition information as well as our process knowledge.

- ADVA® 140M
- ADVA® 190
- ADVA® 195
- ADVA® 198
- Daraset® 400
- Darex® II AEA
- DARAVAIR® 1000
- DARAVAIR® M
- DCI®
- DCI® S
- Eclipse® Floor 200
- Eclipse® 4500
- Morset®
- QUANTEC® PL-490
- Recover®
- WRDA® 64
- ZYLA® 625
- ZYLA® 620
- ZYLA® 630

Note that the corresponding Safety Data Sheets (SDSs) for these products list hazardous ingredients in Section 3 and non-hazardous ingredients in section 15. Hazardous ingredients are listed at 1% or greater and more highly hazardous substances such as carcinogens, mutagens, reproductive toxins and sensitizers are listed at 0.1% or greater.

Sincerely,

A handwritten signature in black ink that reads "David J. Curreri".

David J. Curreri

Director, Global Product Stewardship

Department of Environment, Health and Safety

The following materials and chemicals are listed on the Living Building Challenge 3.1 Red List*.

- Alkylphenols
- Asbestos
- Bisphenol A (BPA)
- Cadmium
- Chlorinated Polyethylene & Chlorosulfonated Polyethylene
- Chlorobenzenes
- Chlorofluorocarbons (CFCs) & Hydrochlorofluorocarbons (HCFCs)
- Chloroprene (Neoprene)
- Chromium VI
- Chlorinated Polyvinyl Chloride (CPVC)
- Formaldehyde (added)
- Halogenated Flame Retardants (HFRs)
- Lead (added)
- Mercury
- Polychlorinated Biphenyls (PCBs)
- Perfluorinated Compounds (PFCs)
- Phthalates
- Polyvinyl Chloride (PVC)
- Polyvinylidene Chloride (PVDC)
- Short Chain Chlorinated Paraffins
- Teflon
- Wood treatments containing Creosote, Arsenic or Pentachlorophenol
- Volatile Organic Compounds (VOCs) in wet applied products

*The Living Building Challenge acknowledges there are instances when unintentional trace amounts of a red list ingredient may be present due to natural occurrence in raw materials or unintentional addition through certain manufacturing processes.

VOC regulations are not applicable to Concrete Admixtures.

**The Living Building @ Ga Tech –
Atlanta, Ga
Dalney St, Atlanta, GA 30313**

Architect / Engineer: Lord Aeck Sargent
General Contractor: Skanska
Trade Contractor: Greater Georgia Concrete, LLC
Date: April 4, 2018

SUBMITTAL INCLUDES:

- **Admixture Red List Letter from Argos and GCP Applied Technologies for GGC Admixture product information dated 4/2/2018 in response to John Parkman's letter (see attached).**
 - **Skanska - please give GGC further instructions on how to proceed**



Greater Georgia Concrete LLC

Greater Georgia Concrete LLC
www.ggcllc.com

4500 Peachtree Lakes Drive
Berkeley Lake, GA 30096

(o) 678-797-1901
(f) 678-797-1822



62 Whittemore Avenue
Cambridge, Massachusetts 02140
USA

GCPat.com

Jason D. Wimberly, PE, MCE
Technical Services Mgr, Concrete-SE Region
+1 704 995 1636 Mobile
+1 864 760 1340 Facsimile
Jason.Wimberly@gcpat.com

April 2, 2018

Mr. Polo Bascunan
Argos USA
3015 Windward Plaza
Suite 300
Alpharetta, GA 30005 USA

RE: Red List Documentation – The Living Building at Georgia Tech

Dear Mr. Bascunan:

We recognize that Argos is supplying concrete for a project at Georgia Tech looking to meet the Living Building Challenge. On March 30, 2018 GCP remitted to Argos a letter stating that the admixtures to be used on the project – ADVA 198, DAREX II AEA and ZYLA 620 – did not contain any intentionally added materials or chemicals contained on the LBC 3.1 Red List.

Per an email received today, the “materials committee” is requesting further documentation to include backup showing Chemical Abstract Services Registry Numbers (CASRN) for the aforementioned admixtures. To this extent, I have attached our SDS's for these chemicals to this letter.

Detailed compositional information, beyond what is available in our published SDS, is part of GCP's intellectual property, and is considered confidential information. As a result, we have historically not shared such information without a signed confidentiality agreement.

Should it become absolutely necessary to disclose such information, we will need to have in place Non-Disclosure Agreements (NDAs) signed by corporate officers of all parties that have a need to receive or have access to the confidential information.

Should you have any further requests regarding this matter, please feel free to contact me at your convenience.

Sincerely,

A handwritten signature in blue ink, appearing to read "Jason D. Wimberly".

Jason D. Wimberly, PE, MCE

Enc: SDS for ADVA 198, DAREX II AEA, ZYLA 620
GCP Red List Certification Letter Dated 3-30-2018

ecc: Angel Abelleria, GCP
Terry Harris, GCP
Bill Cagle, GCP



Safety Data Sheet

Page 1/8

Printing date 06/15/2016

Version Number 1.0

Reviewed on 06/15/2016

1 Identification

Product identifier

Trade name: **ADVA 198**

SDS ID Number: 2098

Relevant identified uses of the substance or mixture, and uses advised against
Specialty construction product. Not intended for other uses

Details of the supplier of the safety data sheet

Manufacturer/Supplier:

GCP Applied Technologies
62 Whittemore Avenue
Cambridge, MA 02140 USA

GCP Canada, Inc.
294 Clements Road W.
Ajax, Ontario L1S 3C6 Canada

Information department:

Environmental Health & Safety
USA: +1-617-876-1400 (24 hours)
+1-800-354-5414 (8AM - 5PM) Not functional within Massachusetts
CAN: 1-905-683-8561 (24 hours)

Transport Emergency: Chemtrec +1-800-424-9300 (24 hours)

2 Hazard(s) identification

Classification of the substance or mixture

May cause an allergic skin reaction.

Label elements:

Hazard pictograms



GHS07

Warning

Hazard statements

May cause an allergic skin reaction.

Precautionary statements

Avoid breathing dust/fume/gas/mist/vapors/spray

Wear protective gloves.

IF ON SKIN: Wash with plenty of water.

If skin irritation or rash occurs: Get medical advice/attention.

Wash contaminated clothing before reuse.

Dispose of contents/container in accordance with local/regional/national/international regulations.

(Cont. on page 2)

USGHS

Safety Data Sheet

Printing date 06/15/2016

Version Number 1.0

Reviewed on 06/15/2016

Trade name: **ADVA 198**

NFPA ratings (scale 0 - 4)

(Cont. from page 1)



Health = 1
Fire = 1
Reactivity = 0

HMIS-ratings (scale 0 - 4)



Health = 1
Flammability = 1
Reactivity = 0

Other hazards

Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

* 3 Composition/information on ingredients

Chemical characterization: Mixtures

Description: Mixture of the substances listed below with additional nonhazardous ingredients.

Hazardous components:

26172-55-4	5-chloro-2-methyl-2H-isothiazol-3-one	0.0-0.1%
------------	---------------------------------------	----------

Additional information: For the wording of the listed hazard phrases refer to section 16.

* 4 First-aid measures

Description of first aid measures

General information: Get medical advice/attention if you feel unwell.

After inhalation:

Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.

After skin contact:

Immediately wash contaminated skin with soap or mild detergent and water. If this chemical soaks clothing, immediately remove clothing and wash skin.

After eye contact:

Rinse opened eye for several minutes under running water.

Rinse cautiously with water for several minutes.

Seek immediate medical advice.

After swallowing:

Wash out mouth with water

Do not induce vomiting; immediately call for medical help.

Never give anything by mouth to an unconscious person.

Information for doctor:

Most important symptoms and effects, both acute and delayed May cause sensitization by skin contact.

(Cont. on page 3)

USGHS

Safety Data Sheet

Printing date 06/15/2016

Version Number 1.0

Reviewed on 06/15/2016

Trade name: *ADVA 198*

(Cont. from page 2)

Indication of any immediate medical attention and special treatment needed
No further relevant information available.

5 Fire-fighting measures

Special hazards arising from the substance or mixture No further relevant information available.

Additional information Collect contaminated fire fighting water separately. It must not enter the sewage system.

6 Accidental release measures**Personal precautions, protective equipment and emergency procedures**

Wear protective equipment. Keep unprotected persons away.

Methods and material for containment and cleaning up:

Contain and/or absorb spill with inert material (i.e. sand, vermiculite) then place in a suitable container.

Sweep up spilled product into receptacles.

Dispose contaminated material as waste according to section 13 of the SDS.

Reference to other sections

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

7 Handling and storage**Handling:****Precautions for safe handling**

Open and handle receptacle with care.

Prevent formation of aerosols.

Avoid contact with eyes, skin and clothing.

Do not take internally.

Practice good personal hygiene to avoid ingestion.

Use only with adequate ventilation.

Wash clothing before reuse.

FOR PROFESSIONAL USE ONLY. KEEP OUT OF CHILDREN'S REACH.

Information about protection against explosions and fires: No special measures required.

Conditions for safe storage, including any incompatibilities**Storage:**

Information about storage in one common storage facility: No special measures required.

Further information about storage conditions: Keep receptacle tightly sealed.

Specific end use(s) No further relevant information available.

USGHS

(Cont. on page 4)

Safety Data Sheet

Printing date 06/15/2016

Version Number 1.0

Reviewed on 06/15/2016

Trade name: *ADVA 198*

(Cont. from page 3)

8 Exposure controls/personal protection

Additional information about design of technical systems: No further data; see item 7.

Control parameters**Components with limit values that require monitoring at the workplace:**

The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

Additional information: The lists that were valid during the creation were used as basis.

Exposure controls**Personal protective equipment:****General protective and hygienic measures:**

Avoid contact with the eyes and skin.

The usual precautionary measures for handling chemicals should be followed.

Breathing equipment:

Respiratory protection is not normally required. However, a chemical cartridge respirator with organic vapor cartridge and a prefilter for dusts/mists is required at or above the applicable exposure limits (consult exposure guidelines). If no limits exist, use an approved respirator whenever a vapor or mist is generated or if respiratory irritation occurs. Supplied air respirator (SCBA) is required at exposure levels above the capabilities of a chemical cartridge respirator.

Protection of hands:

Gloves should be worn to prevent skin contact and should be impermeable and resistant to the product.

Rubber or other impervious gloves should be worn to prevent skin contact.

Material of gloves

Gloves should be worn to prevent skin contact and should be impermeable and resistant to the product.

Eye protection:

Safety glasses with side shield protection.

Safety glasses with side shields should be worn to prevent contact due to splashing. Under high vapor mist concentrations, tightly sealed goggles should be worn.



A face shield should also be worn if there is potential exposure to splash or spray.

Body protection:

Protective work clothing

Use personal protective equipment as required.

Take off contaminated clothing.

9 Physical and chemical properties**Information on basic physical and chemical properties****General Information****Appearance:**

Form: Liquid

(Cont. on page 5)

USGHS

Safety Data Sheet

Printing date 06/15/2016

Version Number 1.0

Reviewed on 06/15/2016

Trade name: *ADVA 198*

(Cont. from page 4)

Color:	According to product specification
Odor:	Characteristic
Odor threshold:	Not determined.
pH-value (~):	Not determined.
Change in condition	
Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	100 °C (212 °F)
Flash point:	100 °C (212 °F)
Flammability (solid, gaseous):	Not applicable.
Decomposition temperature:	Not determined.
Auto igniting:	Product is not selfigniting.
Danger of explosion:	Product does not present an explosion hazard.
Explosion limits:	
Lower:	Not determined.
Upper:	Not determined.
VOC Content (max):	Not determined.
Vapor pressure:	Not determined.
Density: (~)	Not determined.
Relative density	Not determined.
Vapor density	Not determined.
Evaporation rate	Not determined.
Solubility in / Miscibility with Water:	Not miscible or difficult to mix.
Partition coefficient (n-octanol/water):	Not determined.
Viscosity:	
Dynamic:	Not determined.
Kinematic:	Not determined.
Molecular weight	Not applicable.
Other information	No further relevant information available.

10 Stability and reactivity

Reactivity Stable under normal conditions.

Chemical stability

Thermal decomposition: No decomposition if used according to specifications.

Conditions to avoid No further relevant information available.

Incompatible materials: No further relevant information available.

Hazardous decomposition products: Carbon monoxide and carbon dioxide

Additional information: See section 7 for information on handling, storage and conditions to be avoided.

USGHS
(Cont. on page 6)

Safety Data Sheet

Printing date 06/15/2016

Version Number 1.0

Reviewed on 06/15/2016

Trade name: ADVA 198

(Cont. from page 5)

11 Toxicological information**Information on toxicological effects****Acute toxicity:****Primary irritant effect:****on the skin:** No irritating effect expected**on the eye:** No irritating effect expected**Sensitization:** Sensitization possible through skin contact.**Skin sensitization** May cause an allergic skin reaction.**Additional toxicological information:****Carcinogenic categories****IARC (International Agency for Research on Cancer) Human Carcinogenicity:****Group 1- Positive, Group 2A- Probable, Group 2B- Possible, Group 3- Not Classifiable**

None of the ingredients is listed.

NTP (National Toxicology Program)**K-Known to be carcinogenic, R-May reasonably be anticipated to be carcinogenic**

None of the ingredients is listed.

OSHA-Ca (Occupational Safety & Health Administration)

None of the ingredients is listed.

12 Ecological information**Toxicity****Aquatic toxicity:** No further relevant information available.**Persistence and degradability** No further relevant information available.**Behavior in environmental systems:****Bioaccumulative potential** No further relevant information available.**Mobility in soil** No further relevant information available.**Additional ecological information:****General notes:** Not known to be hazardous to water.**Results of PBT and vPvB assessment****PBT:** Not applicable.**vPvB:** Not applicable.**Other adverse effects** No further relevant information available.**13 Disposal considerations****Waste treatment methods** Comply with Federal, State and local regulations.

(Cont. on page 7)

USGHS

Safety Data Sheet

Printing date 06/15/2016

Version Number 1.0

Reviewed on 06/15/2016

Trade name: *ADVA 198*

(Cont. from page 6)

Recommendation:



Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

Uncleaned packagings:

Recommendation: Disposal must be made according to official regulations.

* 14 Transport information

UN-Number

DOT, ADR, ADN, IMDG, IATA Not applicable.

UN proper shipping name

DOT, ADR, ADN, IMDG, IATA Not applicable.

Transport hazard class(es)

DOT, ADR, ADN, IMDG, IATA
Class Not applicable.

Packing group

DOT, ADR, IMDG, IATA Not applicable.

Environmental hazards:

Marine pollutant: No

Special precautions for user Not applicable.

Transport/Additional information: Not classified as a dangerous good for transport by road, rail or air.

DOT

Remarks: Not Regulated.

UN "Model Regulation": Not applicable.

* 15 Regulatory information

SARA (Superfund Amendments and Reauthorization Act)

Section 302/304 (extremely hazardous substances):

None of the ingredients is listed.

Section 313 Reportable Ingredients (Chemicals present below reporting threshold are exempt):

None of the ingredients is listed.

SARA Section 312/Tier I & II Hazard Categories:

Health Immediate (acute)	Yes
Health Delayed (chronic)	No
Flammable	No
Reactive	No
Pressure	No

North America Chemical Inventory Status

TSCA (Toxic Substances Control Act - United States):

All ingredients are listed or exempt from listing unless otherwise noted below.

(Cont. on page 8)

USGHS

Safety Data Sheet

Printing date 06/15/2016

Version Number 1.0

Reviewed on 06/15/2016

Trade name: ADVA 198

(Cont. from page 7)

CEPA (Canadian DSL):

All ingredients are listed or exempt from listing unless otherwise noted below.

Right to Know Ingredient Disclosure:

Proprietary Polyacrylate NJTSN 801416052

Proprietary Copolymer - NJTSN801416055

527-07-1 Sodium gluconate

7732-18-5 Water

California Proposition 65**Chemicals known to cause cancer:**

Ethylene oxide

propylene oxide

Chemicals known to cause reproductive toxicity for females:

75-21-8 Ethylene oxide

Chemicals known to cause reproductive toxicity for males:

75-21-8 Ethylene oxide

Chemicals known to cause developmental toxicity:

75-21-8 Ethylene oxide

Carcinogenicity Categories**EPA (Environmental Protection Agency)**

None of the ingredients is listed.

TLV-ACGIH (THE American Conference of Governmental Industrial Hygienists)**Human Carcinogen - A1 Confirmed, A2 Suspected, A3 Unknown Relevance, A4 Not Classifiable**

None of the ingredients is listed.

NIOSH-Cancer (National Institute for Occupational Safety and Health)

None of the ingredients is listed.

Volatile Organic Compounds (VOC) reported per the Emission Standards.

If no g/L value is provided this product is not subject to above standard.

16 Other information

The data included herein are presented in accordance with various environment, health and safety regulations. It is the responsibility of a recipient of the data to remain currently informed on chemical hazard information, to design and update its own program and to comply with all national, federal, state and local laws and regulations applicable to safety, occupational health, right-to-know and environmental protection.

Department issuing SDS:

GCP Applied Technologies

62 Whittemore Avenue

Cambridge, MA 02140 USA

USA: +1-617-876-1400 (24 hours)

+1-800-354-5414

Date of preparation / last revision 06/15/2016 / -**The first date of preparation** 02/21/2014**Number of revision times and the latest revision date** 1.0 / 06/15/2016

USGHS

**Safety Data Sheet**

Printing date 02/18/2016

Version Number 1.2

Reviewed on 02/18/2016

1 Identification**Product identifier**Trade name: ***DAREX II AEA***

SDS ID Number: 60059

Relevant identified uses of the substance or mixture, and uses advised against
Specialty construction product. Not intended for other uses**Details of the supplier of the safety data sheet****Manufacturer/Supplier:**GCP Applied Technologies
62 Whittemore Avenue
Cambridge, MA 02140 USAGCP Canada, Inc.
294 Clements Road W.
Ajax, Ontario L1S 3C6 Canada**Information department:**

In Canada: +1-905-683-8561

Environmental Health & Safety

USA: +1-617-876-1400 (24 hours)

+1-800-354-5414 (8AM - 5PM) Not functional within Massachusetts

CAN: 1-905-683-8561 (24 hours)

Transport Emergency: Chemtrec +1-800-424-9300 (24 hours)**2 Hazard(s) identification****Classification of the substance or mixture**

Causes serious eye irritation.

Label elements:**Hazard pictograms**

GHS07

Warning

Hazard statements

Causes serious eye irritation.

Precautionary statements

Wash thoroughly after handling.

Wear eye protection / face protection.

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If eye irritation persists: Get medical advice/attention.

(Cont. on page 2)

USGHS

Safety Data Sheet

Printing date 02/18/2016

Version Number 1.2

Reviewed on 02/18/2016

Trade name: **DAREX II AEA**

NFPA ratings (scale 0 - 4)

(Cont. from page 1)



Health = 1
Fire = 1
Reactivity = 0

HMIS-ratings (scale 0 - 4)



Health = 2
Flammability = 1
Reactivity = 0

Other hazards

Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

* 3 Composition/information on ingredients

Chemical characterization: Mixtures

Description:

Mixture of the substances listed below with additional nonhazardous ingredients.

Mixture of the substances listed below with additional nonhazardous ingredients.

Hazardous components:

61790-45-2	Fatty acids, tall-oil, sodium salt	2.0-5.0%
61790-44-1	Fatty acids, tall oil, potassium salts	2.0-5.0%

Additional information: For the wording of the listed hazard phrases refer to section 16.

* 4 First-aid measures

Description of first aid measures

General information:

Get medical advice/attention if you feel unwell.

After inhalation:

Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.

After skin contact:

Immediately wash contaminated skin with soap or mild detergent and water. If this chemical soaks clothing, immediately remove clothing and wash skin.

After eye contact:

Rinse opened eye for several minutes under running water.

Rinse cautiously with water for several minutes.

Seek immediate medical advice.

After swallowing:

Wash out mouth with water

Rinse mouth.

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Trade name: DAREX II AEA

(Cont. from page 2)

Do not induce vomiting; immediately call for medical help.

Never give anything by mouth to an unconscious person.

Information for doctor:

Most important symptoms and effects, both acute and delayed No further relevant information available.

Indication of any immediate medical attention and special treatment needed

No further relevant information available.

5 Fire-fighting measures

Special hazards arising from the substance or mixture No further relevant information available.

Additional information Collect contaminated fire fighting water separately. It must not enter the sewage system.

6 Accidental release measures**Personal precautions, protective equipment and emergency procedures**

Wear protective equipment. Keep unprotected persons away.

Methods and material for containment and cleaning up:

Contain and/or absorb spill with inert material (i.e. sand, vermiculite) then place in a suitable container.

Sweep up spilled product into receptacles.

Dispose contaminated material as waste according to section 13 of the SDS.

Reference to other sections

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

7 Handling and storage**Handling:****Precautions for safe handling**

Open and handle receptacle with care.

Avoid contact with eyes, skin and clothing.

Do not take internally.

Practice good personal hygiene to avoid ingestion.

Use only with adequate ventilation.

Wash clothing before reuse.

FOR PROFESSIONAL USE ONLY. KEEP OUT OF CHILDREN'S REACH.

Information about protection against explosions and fires: No special measures required.

Conditions for safe storage, including any incompatibilities**Storage:**

Information about storage in one common storage facility: No special measures required.

Further information about storage conditions: Keep receptacle tightly sealed.

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Reviewed on 02/18/2016

Trade name: *DAREX II AEA*

(Cont. from page 3)

Specific end use(s) No further relevant information available.**8 Exposure controls/personal protection****Additional information about design of technical systems:** No further data; see item 7.**Control parameters****Components with limit values that require monitoring at the workplace:**

The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

Additional information: The lists that were valid during the creation were used as basis.

Exposure controls**Personal protective equipment:****General protective and hygienic measures:**

Avoid contact with the eyes and skin.

The usual precautionary measures for handling chemicals should be followed.

Breathing equipment:

Respiratory protection is not normally required. However, a chemical cartridge respirator with organic vapor cartridge and a prefilter for dusts/mists is required at or above the applicable exposure limits (consult exposure guidelines). If no limits exist, use an approved respirator whenever a vapor or mist is generated or if respiratory irritation occurs. Supplied air respirator (SCBA) is required at exposure levels above the capabilities of a chemical cartridge respirator.

Protection of hands:

Gloves should be worn to prevent skin contact and should be impermeable and resistant to the product. Rubber or other impervious gloves should be worn to prevent skin contact.

Material of gloves

Gloves should be worn to prevent skin contact and should be impermeable and resistant to the product.

Eye protection:

Safety glasses with side shield protection.

Safety glasses with side shields should be worn to prevent contact due to splashing. Under high vapor mist concentrations, tightly sealed goggles should be worn.



A face shield should also be worn if there is potential exposure to splash or spray.

Body protection:

Protective work clothing

Use personal protective equipment as required.

Take off contaminated clothing.

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(Cont. on page 5)

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Trade name: **DAREX II AEA**

(Cont. from page 4)

9 Physical and chemical properties**Information on basic physical and chemical properties****General Information****Appearance:****Form:**

Liquid

Color:

According to product specification

Odor:

Characteristic

Odor threshold:

Not determined.

pH-value (~) at 20 °C (68 °F):

10

Change in condition**Melting point/Melting range:**

Undetermined.

Boiling point/Boiling range:

Undetermined.

Flash point:

Not applicable.

Flammability (solid, gaseous):

Not applicable.

Decomposition temperature:

Not determined.

Auto igniting:

Product is not selfigniting.

Danger of explosion:

Product does not present an explosion hazard.

Explosion limits:**Lower:**

Not determined.

Upper:

Not determined.

VOC Content (max):

Not determined.

Vapor pressure:

Not determined.

Density: (~) at 20 °C (68 °F)1 g/cm³ (8.345 lbs/gal)**Relative density**

Not determined.

Vapor density

Not determined.

Evaporation rate

Not determined.

Solubility in / Miscibility with**Water:**

Not miscible or difficult to mix.

Partition coefficient (n-octanol/water): Not determined.**Viscosity:****Dynamic:**

Not determined.

Kinematic:

Not determined.

Molecular weight

Not applicable.

Other information

No further relevant information available.

10 Stability and reactivity**Reactivity** Stable under normal conditions.**Chemical stability****Thermal decomposition:** No decomposition if used according to specifications.**Conditions to avoid** No further relevant information available.**Incompatible materials:** No further relevant information available.**Hazardous decomposition products:** Carbon monoxide and carbon dioxide**Additional information:** See section 7 for information on handling, storage and conditions to be avoided.

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Trade name: DAREX II AEA

(Cont. from page 5)

11 Toxicological information**Information on toxicological effects****Acute toxicity:****Primary irritant effect:****on the skin:** No irritating effect expected**on the eye:** Causes serious eye damage.**inhalation:** No irritating effect expected**Ingestion:****Additional toxicological information:****Carcinogenic categories****IARC (International Agency for Research on Cancer) Human Carcinogenicity:**
Group 1- Positive, Group 2A- Probable, Group 2B- Possible, Group 3- Not Classifiable

None of the ingredients is listed.

NTP (National Toxicology Program)**K-Known to be carcinogenic, R-May reasonably be anticipated to be carcinogenic**

None of the ingredients is listed.

OSHA-Ca (Occupational Safety & Health Administration)

None of the ingredients is listed.

12 Ecological information**Toxicity****Aquatic toxicity:** No further relevant information available.**Persistence and degradability** No further relevant information available.**Behavior in environmental systems:****Bioaccumulative potential** No further relevant information available.**Mobility in soil** No further relevant information available.**Additional ecological information:****General notes:** Not known to be hazardous to water.**Results of PBT and vPvB assessment****PBT:** Not applicable.**vPvB:** Not applicable.**Other adverse effects** No further relevant information available.**13 Disposal considerations****Waste treatment methods** Comply with Federal, State and local regulations.

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Reviewed on 02/18/2016

Trade name: DAREX II AEA

(Cont. from page 6)

Recommendation:

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

Uncleaned packagings:**Recommendation:** Disposal must be made according to official regulations.**14 Transport information****UN-Number**

DOT, ADR, ADN, IMDG, IATA Not applicable.

UN proper shipping name

DOT, ADR, ADN, IMDG, IATA Not applicable.

Transport hazard class(es)DOT, ADR, ADN, IMDG, IATA
Class Not applicable.**Packing group**

DOT, ADR, IMDG, IATA Not applicable.

Environmental hazards:

Marine pollutant: No

Special precautions for user Not applicable.**Transport/Additional information:** Not classified as a dangerous good for transport by road, rail or air.**DOT****Remarks:** Not Regulated.**UN "Model Regulation":** Not applicable.**15 Regulatory information****SARA (Superfund Amendments and Reauthorization Act)****Section 302/304 (extremely hazardous substances):**

None of the ingredients is listed.

Section 313 Reportable Ingredients (Chemicals present below reporting threshold are exempt):

None of the ingredients is listed.

SARA Section 312/Tier I & II Hazard Categories:

Health Delayed (chronic)	No
Flammable	No
Reactive	No
Pressure	No
Health Immediate (acute)	Yes

North America Chemical Inventory Status**TSCA (Toxic Substances Control Act - United States):**

All ingredients are listed or exempt from listing unless otherwise noted below.

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Trade name: DAREX II AEA

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CEPA (Canadian DSL):

All ingredients are listed or exempt from listing unless otherwise noted below.

Right to Know Ingredient Disclosure

8002-26-4 Tall Oil

7732-18-5 Water

California Proposition 65**Chemicals known to cause cancer:**

None of the ingredients is listed.

Chemicals known to cause reproductive toxicity for females:

None of the ingredients is listed.

Chemicals known to cause reproductive toxicity for males:

None of the ingredients is listed.

Chemicals known to cause developmental toxicity:

67-56-1 Methanol

Carcinogenicity Categories**EPA (Environmental Protection Agency)**

None of the ingredients is listed.

TLV-ACGIH (THE American Conference of Governmental Industrial Hygienists)**Human Carcinogen - A1 Confirmed, A2 Suspected, A3 Unknown Relevance, A4 Not Classifiable**

None of the ingredients is listed.

NIOSH-Cancer (National Institute for Occupational Safety and Health)

None of the ingredients is listed.

Volatile Organic Compounds (VOC) reported per the Emission Standards.

If no g/L value is provided this product is not subject to above standard.

16 Other information

The data included herein are presented in accordance with various environment, health and safety regulations. It is the responsibility of a recipient of the data to remain currently informed on chemical hazard information, to design and update its own program and to comply with all national, federal, state and local laws and regulations applicable to safety, occupational health, right-to-know and environmental protection.

Department issuing SDS:

GCP Applied Technologies

62 Whittemore Avenue

Cambridge, MA 02140 USA

USA: +1-617-876-1400 (24 hours)

+1-800-354-5414

Date of preparation / last revision 02/18/2016 / 1.1**The first date of preparation** 04/05/2013**Number of revision times and the latest revision date** 1.2 / 02/18/2016

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Safety Data Sheet

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Version Number 1.0

Reviewed on 02/18/2016

1 Identification

Product identifier

Trade name: ZYLA 620**SDS ID Number:** 60197**Relevant identified uses of the substance or mixture, and uses advised against**
Specialty construction product. Not intended for other uses

Details of the supplier of the safety data sheet

Manufacturer/Supplier:GCP Applied Technologies
62 Whittemore Avenue
Cambridge, MA 02140 USAGCP Canada, Inc.
294 Clements Road W.
Ajax, Ontario L1S 3C6 Canada**Information department:**Environmental Health & Safety
USA: +1-617-876-1400 (24 hours)
+1-800-354-5414 (8AM - 5PM) Not functional within Massachusetts
CAN: 1-905-683-8561 (24 hours)**Transport Emergency:** Chemtrec +1-800-424-9300 (24 hours)

2 Hazard(s) identification

Classification of the substance or mixture

May cause an allergic skin reaction.

Label elements:**Hazard pictograms**

GHS07

Warning

Hazard statements

May cause an allergic skin reaction.

Precautionary statementsWear protective gloves.
Avoid breathing dust/fume/gas/mist/vapors/spray
IF ON SKIN: Wash with plenty of water.
If skin irritation or rash occurs: Get medical advice/attention.
Wash contaminated clothing before reuse.
Dispose of contents/container in accordance with local/regional/national/international regulations.

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Trade name: **ZYLA 620**

NFPA ratings (scale 0 - 4)

(Cont. from page 1)



Health = 1
Fire = 1
Reactivity = 0

HMIS-ratings (scale 0 - 4)



Health = *1
Flammability = 1
Reactivity = 0

Other hazards

Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

* 3 Composition/information on ingredients

Chemical characterization: Mixtures

Description: Mixture of the substances listed below with additional nonhazardous ingredients.

Hazardous components:

102-71-6	Triethanolamine	1.0-2.0%
26172-55-4	5-chloro-2-methyl-2H-isothiazol-3-one	0.0-0.1%

Additional information: For the wording of the listed hazard phrases refer to section 16.

* 4 First-aid measures

Description of first aid measures

General information: Get medical advice/attention if you feel unwell.

After inhalation:

Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.

After skin contact:

Immediately wash contaminated skin with soap or mild detergent and water. If this chemical soaks clothing, immediately remove clothing and wash skin.

After eye contact: Rinse cautiously with water for several minutes.

After swallowing: Rinse mouth.

Information for doctor:

Most important symptoms and effects, both acute and delayed May cause sensitization by skin contact.

Indication of any immediate medical attention and special treatment needed

No further relevant information available.

5 Fire-fighting measures

Special hazards arising from the substance or mixture No further relevant information available.

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Reviewed on 02/18/2016

Trade name: ZYLA 620

(Cont. from page 2)

Additional information Collect contaminated fire fighting water separately. It must not enter the sewage system.**6 Accidental release measures****Personal precautions, protective equipment and emergency procedures**

Wear protective equipment. Keep unprotected persons away.

Methods and material for containment and cleaning up:

Contain and/or absorb spill with inert material (i.e. sand, vermiculite) then place in a suitable container.

Sweep up spilled product into receptacles.

Dispose contaminated material as waste according to section 13 of the SDS.

Reference to other sections

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

7 Handling and storage**Handling:****Precautions for safe handling**

Prevent formation of aerosols.

Avoid contact with eyes, skin and clothing.

Do not take internally.

Practice good personal hygiene to avoid ingestion.

Use only with adequate ventilation.

Wash clothing before reuse.

FOR PROFESSIONAL USE ONLY. KEEP OUT OF CHILDREN'S REACH.

Information about protection against explosions and fires: No special measures required.**Conditions for safe storage, including any incompatibilities****Storage:****Information about storage in one common storage facility:** No special measures required.**Further information about storage conditions:** Keep receptacle tightly sealed.**Specific end use(s)** No further relevant information available.**8 Exposure controls/personal protection****Additional information about design of technical systems:** No further data; see item 7.**Control parameters****Components with limit values that require monitoring at the workplace:****102-71-6 Triethanolamine**TLV (USA) Long-term value: 5 mg/m³**Additional information:** The lists that were valid during the creation were used as basis.

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Version Number 1.0

Reviewed on 02/18/2016

Trade name: **ZYLA 620**

(Cont. from page 3)

Exposure controls**Personal protective equipment:****General protective and hygienic measures:**

The usual precautionary measures for handling chemicals should be followed.

Breathing equipment:

Respiratory protection is not normally required. However, a chemical cartridge respirator with organic vapor cartridge and a prefilter for dusts/mists is required at or above the applicable exposure limits (consult exposure guidelines). If no limits exist, use an approved respirator whenever a vapor or mist is generated or if respiratory irritation occurs. Supplied air respirator (SCBA) is required at exposure levels above the capabilities of a chemical cartridge respirator.

Protection of hands:

Gloves should be worn to prevent skin contact and should be impermeable and resistant to the product. Rubber or other impervious gloves should be worn to prevent skin contact.

Material of gloves

Gloves should be worn to prevent skin contact and should be impermeable and resistant to the product.

Eye protection:

Safety glasses with side shield protection.

Safety glasses with side shields should be worn to prevent contact due to splashing. Under high vapor mist concentrations, tightly sealed goggles should be worn.



A face shield should also be worn if there is potential exposure to splash or spray.

Body protection:

Use personal protective equipment as required.

Take off contaminated clothing.

9 Physical and chemical properties**Information on basic physical and chemical properties****General Information****Appearance:**

Form:	Liquid
Color:	According to product specification
Odor:	Characteristic
Odor threshold:	Not determined.

pH-value (~) at 20 °C (68 °F): 8

Change in condition

Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	Undetermined.
Flash point:	Not applicable.

Flammability (solid, gaseous): Not applicable.

Decomposition temperature: Not determined.

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Reviewed on 02/18/2016

Trade name: **ZYLA 620**

(Cont. from page 4)

Auto igniting:	Product is not selfigniting.
Danger of explosion:	Product does not present an explosion hazard.
Explosion limits:	
Lower:	Not determined.
Upper:	Not determined.
VOC Content (max):	Not determined.
Vapor pressure:	Not determined.
Density: (~) at 20 °C (68 °F)	1.1 g/cm ³ (9.18 lbs/gal)
Relative density	Not determined.
Vapor density	Not determined.
Evaporation rate	Not determined.
Solubility in / Miscibility with Water:	Not miscible or difficult to mix.
Partition coefficient (n-octanol/water):	Not determined.
Viscosity:	
Dynamic:	Not determined.
Kinematic:	Not determined.
Molecular weight	Not applicable.
Other information	No further relevant information available.

* **10 Stability and reactivity****Reactivity** Stable under normal conditions.**Chemical stability****Thermal decomposition:** No decomposition if used according to specifications.**Conditions to avoid** No further relevant information available.**Incompatible materials:** No further relevant information available.**Hazardous decomposition products:** Carbon monoxide and carbon dioxide**Additional information:** See section 7 for information on handling, storage and conditions to be avoided.* **11 Toxicological information****Information on toxicological effects****Acute toxicity:****LD/LC50 values relevant for classification:****102-71-6 Triethanolamine**

Oral	LD50	5300 mg/kg (guinea pig) 6400 mg/kg (rat - male)
Dermal	LD50	>10000 mg/kg (rabbit)
	LC50, 96h	11800 mg/l (fish)

Primary irritant effect:**on the skin:** No irritating effect expected**on the eye:** No irritating effect expected

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Trade name: ZYLA 620

(Cont. from page 5)

Inhalation: No irritating effect expected**Ingestion:****Sensitization:** Sensitization possible through skin contact.**Additional toxicological information:****102-71-6 Triethanolamine**

NOEC/NOEL 16 mg/l (crustaceans) (Chronic NOEC)

Carcinogenic categories**IARC (International Agency for Research on Cancer) Human Carcinogenicity:****Group 1- Positive, Group 2A- Probable, Group 2B- Possible, Group 3- Not Classifiable**

102-71-6 Triethanolamine

3

NTP (National Toxicology Program)**K-Known to be carcinogenic, R-May reasonably be anticipated to be carcinogenic**

None of the ingredients is listed.

OSHA-Ca (Occupational Safety & Health Administration)

None of the ingredients is listed.

12 Ecological information**Toxicity****Aquatic toxicity:****102-71-6 Triethanolamine**

EC50, 48h 609.88 mg/l (daphnia magna)

EC50, 72h 512 mg/l (algae)

Persistence and degradability No further relevant information available.**Behavior in environmental systems:****Bioaccumulative potential** No further relevant information available.**Mobility in soil** No further relevant information available.**Additional ecological information:****General notes:** Not known to be hazardous to water.**Results of PBT and vPvB assessment****PBT:** Not applicable.**vPvB:** Not applicable.**Other adverse effects** No further relevant information available.**13 Disposal considerations****Waste treatment methods** Comply with Federal, State and local regulations.

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Printing date 02/18/2016

Version Number 1.0

Reviewed on 02/18/2016

Trade name: ZYLA 620

(Cont. from page 6)

Recommendation:

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

Uncleaned packagings:**Recommendation:** Disposal must be made according to official regulations.**14 Transport information****UN-Number**

DOT, ADR, ADN, IMDG, IATA Not applicable.

UN proper shipping name

DOT, ADR, ADN, IMDG, IATA Not applicable.

Transport hazard class(es)DOT, ADR, ADN, IMDG, IATA
Class Not applicable.**Packing group**

DOT, ADR, IMDG, IATA Not applicable.

Environmental hazards:

Marine pollutant: No

Special precautions for user Not applicable.**Transport/Additional information:** Not classified as a dangerous good for transport by road, rail or air.**DOT****Remarks:** Not Regulated.**UN "Model Regulation":** Not applicable.**15 Regulatory information****SARA (Superfund Amendments and Reauthorization Act)****Section 302/304 (extremely hazardous substances):**

None of the ingredients is listed.

Section 313 Reportable Ingredients (Chemicals present below reporting threshold are exempt):

None of the ingredients is listed.

SARA Section 312/Tier I & II Hazard Categories:

Health Immediate (acute)	Yes
Health Delayed (chronic)	No
Flammable	No
Reactive	No
Pressure	No

North America Chemical Inventory Status**TSCA (Toxic Substances Control Act - United States):**

All ingredients are listed or exempt from listing unless otherwise noted below.

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Reviewed on 02/18/2016

Trade name: ZYLA 620

(Cont. from page 7)

CEPA (Canadian DSL):

All ingredients are listed or exempt from listing unless otherwise noted below.

Right to Know Ingredient Disclosure

8029-43-4	Corn syrup
527-07-1	Sodium gluconate
	Proprietary Polyacrylate Copolymer - NJ801416030
7732-18-5	Water

California Proposition 65**Chemicals known to cause cancer:**

Diethanolamine

Chemicals known to cause reproductive toxicity for females:

None of the ingredients is listed.

Chemicals known to cause reproductive toxicity for males:

None of the ingredients is listed.

Chemicals known to cause developmental toxicity:

None of the ingredients is listed.

Carcinogenicity Categories**EPA (Environmental Protection Agency)**

None of the ingredients is listed.

TLV-ACGIH (THE American Conference of Governmental Industrial Hygienists)**Human Carcinogen - A1 Confirmed, A2 Suspected, A3 Unknown Relevance, A4 Not Classifiable**

Triethanolamine

A3

NIOSH-Cancer (National Institute for Occupational Safety and Health)

None of the ingredients is listed.

Volatile Organic Compounds (VOC) reported per the Emission Standards.

If no g/L value is provided this product is not subject to above standard.

16 Other information

The data included herein are presented in accordance with various environment, health and safety regulations. It is the responsibility of a recipient of the data to remain currently informed on chemical hazard information, to design and update its own program and to comply with all national, federal, state and local laws and regulations applicable to safety, occupational health, right-to-know and environmental protection.

Department issuing SDS:

GCP Applied Technologies
62 Whittemore Avenue
Cambridge, MA 02140 USA
USA: +1-617-876-1400 (24 hours)
+1-800-354-5414

Date of preparation / last revision 02/18/2016 / -**The first date of preparation** 01/15/2015**Number of revision times and the latest revision date** 1.0 / 02/18/2016

USGHS



62 Whittemore Avenue
Cambridge, Massachusetts 02140
USA

GCPat.com

David J. Curreri
Director, Global Product Stewardship
+1 617-498-4915 Office
+1 617-834-7411 Mobile
David.j.curreri@gcpat.com

RE: Living Building Challenge – Red List (March 30, 2018)

To whom it may concern:

The following Concrete Admixtures supplied by GCP Applied Technologies do not contain any intentionally added materials or chemicals listed on the Living Building Challenge (LBC) 3.1 Red List as referenced in this letter. This assessment is based on review of raw material supplier Safety Data Sheets and additional composition information as well as our process knowledge.

- ADVA® 140M
- ADVA® 190
- ADVA® 195
- ADVA® 198
- Daraset® 400
- Darex® II AEA
- DARAVAIR® 1000
- DARAVAIR® M
- DCI®
- DCI® S
- Eclipse® Floor 200
- Eclipse® 4500
- Morset®
- QUANTEC® PL-490
- Recover®
- WRDA® 64
- ZYLA® 625
- ZYLA® 620
- ZYLA® 630

Note that the corresponding Safety Data Sheets (SDSs) for these products list hazardous ingredients in Section 3 and non-hazardous ingredients in section 15. Hazardous ingredients are listed at 1% or greater and more highly hazardous substances such as carcinogens, mutagens, reproductive toxins and sensitizers are listed at 0.1% or greater.

Sincerely,

A handwritten signature in black ink that reads "David J. Curreri".

David J. Curreri

Director, Global Product Stewardship

Department of Environment, Health and Safety

The following materials and chemicals are listed on the Living Building Challenge 3.1 Red List*.

- Alkylphenols
- Asbestos
- Bisphenol A (BPA)
- Cadmium
- Chlorinated Polyethylene & Chlorosulfonated Polyethylene
- Chlorobenzenes
- Chlorofluorocarbons (CFCs) & Hydrochlorofluorocarbons (HCFCs)
- Chloroprene (Neoprene)
- Chromium VI
- Chlorinated Polyvinyl Chloride (CPVC)
- Formaldehyde (added)
- Halogenated Flame Retardants (HFRs)
- Lead (added)
- Mercury
- Polychlorinated Biphenyls (PCBs)
- Perfluorinated Compounds (PFCs)
- Phthalates
- Polyvinyl Chloride (PVC)
- Polyvinylidene Chloride (PVDC)
- Short Chain Chlorinated Paraffins
- Teflon
- Wood treatments containing Creosote, Arsenic or Pentachlorophenol
- Volatile Organic Compounds (VOCs) in wet applied products

*The Living Building Challenge acknowledges there are instances when unintentional trace amounts of a red list ingredient may be present due to natural occurrence in raw materials or unintentional addition through certain manufacturing processes.

VOC regulations are not applicable to Concrete Admixtures.